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Capital Investment in the Railways

THE immediate profitable field for capital investment in British Railways has been estimated at £500 million over the next 10 years or so, in addition to annual renewal expenditure; this was stated by Mr. A. J. Pearson, then Chief Officer (Administration), the Railway Executive, in the course of his paper on developments and prospects in British Transport read in March of last year to the Institute of Transport. Further reference to such capital improvements was made by Sir Brian Robertson, Chairman of the British Transport Commission, in his speech at the opening of the Sixteenth International Railway Congress in London last month. The Commission, he said, believed that the stage had been reached when there should be an imaginative and bold plan for large-scale works of modernisation and development of the railways, and that there was a sound economic case for such a plan in the interests of traders, of passengers, and of the national wellbeing, and it had set itself the task of formulating the details. The Commission now is reported to be taking active steps in working out its schemes. Presumably it has good reason to

believe that if a case is made out, Ministerial sanction to start on the plans will be forthcoming; this is likely in view of the greater degree of competition to which the railways now are subjected as a result of the Transport Act, 1953. The scope for development is vast, and any concerted plan may well add up to £500 million. It must provide for changes in the flow of traffic such as those caused by re-orientation of the coal and steel industries. It must provide also for electrification and developments in diesel motive power for both passenger and goods traffic. Apart from the benefit to the national economy through increased efficiency in dealing with traffic, the implementation of these schemes will greatly benefit the industries which supply material to the railways.

London Fares

A PRELIMINARY decision of the Transport Tribunal on the British Transport Commission Passenger Charges Scheme, 1954, limits the additional revenue which the London Transport Executive would obtain from fare increases to £3,600,000, which is some £700,000 less than the Executive had anticipated. This would entail a reduction of the estimated surplus to £300,000. One of the instruments designed to bring this about is, apparently, the introduction of a 3d. fare. A further proposal is to preserve the existing degree of fare parity between London Transport and British Railways London lines. This may well serve to increase the anticipated deficit on these lines to more than the £1,200,000 expected under the original proposals, and thus bring the overall London area deficit to some £1,000,000. At the conclusion of the public hearing, Mr. Hubert Hull, President of the Tribunal, announced that if the Tribunal decided that the gap to be filled differed from the amount proposed by the Commission, the latter would be asked to put forward proposals to meet the situation. Sufficient time would then be allowed for these proposals to be considered before the public hearing was resumed. This course now has been adopted, and both the Commission and the objectors will be given an opportunity of studying each other's suggestions before the Tribunal sits again in public.

Transport and Industrial Honours

THE further selection from the Queen's Birthday Honours List in our personal pages in this issue again shows few names directly connected with railways in this country, but the award of the O.B.E. to Mr. H. H. Phillips, Assistant Chief Regional Manager, Western Region, for his services as Chief Commercial Officer (Railways), British Transport Commission, is a notable exception. Mr. Phillips visited Australia in 1953 at the request of the Premier of Tasmania to undertake an investigation into the working of the Tasmanian Railways, and returned to take up his present appointment from February 1, 1954. Among railway officials overseas, Mr. I. B. Trevor, General Manager, Kowloon-Canton Railway (British Section) receives the C.B.E., and Mr. Stuart Ainsworth, Manager of the Guayaquil-Paz Railway, the O.B.E. Among other notable honours in the transport world is that to Mr. Arthur Deakin, General Secretary of the Transport & General Workers' Union, who becomes a Privy Councillor.

Loan for French West African Development

THE International Bank for Reconstruction & Development has made a loan of \$7,600,000 towards a programme of railway modernisation being undertaken in French West Africa. The loan, which is for a term of twelve years, carries interest at 4½ per cent, and is guaranteed by the Republic of France. It is understood it will be applied in part to financing the purchase of diesel locomotives. There are four separate systems, all of metre-gauge, totalling some 2,400 route miles and administered by a single undertaking with its headquarters in Dakar, the capital of Senegal. The Dakar-Niger links Dakar with the upper Niger at Bamako, serving the colonies of Senegal and French Sudan. The other three systems, serving French Guinea, the Ivory Coast, and Dahomey, also bear the word

Niger in their titles (Conakry-Niger, Abidjan-Niger, and Bénin-Niger respectively), but only the first-named taps the upper reaches of the river. There is a large-scale programme, being partly carried out, to build new lines to open up new districts for settlement and cultivation and link the different systems; if carried out in its entirety it will bring the mileage to over 3,400. Both diesel locomotives and railcars are already widely used.

German Export Incentives

GERMANY will not renew the law on export incentives by means of tax adjustments when it expires at the end of next year. The announcement is given in a joint statement by the British and German Governments in which it is made clear that Germany accepts that British steel and coal exports are not State-subsidised and that British internal steel and coal prices are not such as to subsidise the export industries using steel and coal. The policy of both governments is that "international trade competition should follow natural lines and develop freely." The British Government does not intend to restore the system whereby scarce materials were allocated at controlled prices, thus introducing artificiality into production, distribution, and exporting. The co-operation of other Governments is sought in working towards the abolition of subsidies generally. The statement should be received encouragingly by industry here as offering a hope of a settlement of the question within the O.E.C. Countries, which agreed last autumn on a "standstill" period.

Indian Railways 1955-56 Rolling Stock Programme

IN the 1955-56 rolling stock programme of the Indian Railway Board, of which details appear under Official Notices on page 703, chief interest attaches to the calls for tenders for electric locomotives and multiple-unit stock. Fifteen electric locomotives of 3,000 V. and either 16 three-car sets or 12 four-car sets, with spare motor coaches, of this voltage are required for the Calcutta electrification project; this no doubt relates to the decision to electrify the former East Indian Railway between Howrah terminus, Calcutta, and Burdwan. Twelve more four-car sets are required for the existing 1,500 V. Bombay suburban electric line of the Central and Western Railways. Only twelve complete steam locomotives, of the "YM" class (2-6-4 tank) are called for, but 20 general-purpose and five shunting diesels are listed. Steam locomotive components comprise 17 boilers and 90 fireboxes. Of rolling stock tenders, six relate to tower wagons, and 25 to cranes of varying capacity. As in previous programmes a large quantity of wheelsets is required—31,400, for coaches and wagons on broad, metre, and 2-ft. 6-in. gauge. The Railway Board stresses the importance of timely deliveries and its preference for firm prices.

Control of the New York Central

THE announcement that Mr. Robert R. Young, the financier, is to take control of the 10,745-mile New York Central System brings to an end a struggle which has been going on for some years, and which has recalled the days of Jay Gould and Commodore Vanderbilt. But whereas their moves to obtain control of U.S.A. railways in earlier days were shrouded in the most profound secrecy, the war just concluded has been front page news, to the accompaniment of whole page advertisements in the newspapers, in which the protagonists of both sides—Mr. Young and his party on one side, and Mr. William White, until now President of the New York Central, on the other—have attacked one another with the utmost vigour. In earlier attempts to obtain a seat on the New York Central board, Mr. Young was denied by the Interstate Commerce Commission on account of his being Chairman of the Chesapeake & Ohio Railroad, which had a holding of 800,000 shares in the New York Central, but he resigned this chairmanship earlier in the present year, and the Chesapeake & Ohio sold its shareholding, in order to free Mr. Young to achieve his ambition. These 800,000

shares were acquired, however, by two friends of Mr. Young, whom also he nominated for New York Central directorships, and after the shareholders' meeting on May 26 the validity of this block of votes was challenged; but as Mr. Young's party secured a majority of over a million of the 6,000,000 shares, the result was put beyond doubt.

The Summer Speed-up

A NOTEWORTHY revival in British railway speed is embodied in the summer timetables, which came into operation on June 14. If runs scheduled at 60 m.p.h. and over from start to stop are taken as the customary yardstick, their aggregate mileage, as compared with the winter timetables that have just expired, is found to have nearly doubled. Whereas previously there were 30 daily runs so tabled, totalling 2,397 miles, there are now 50, covering 4,429 miles. This is the greatest mile-a-minute mileage in any European country for which steam haulage is responsible, and nearly attains to the latest figure for steam-operated mileage in the United States, which is 5,015 miles. If electric and diesel-electric traction also are taken into account, however, France, with 268 runs totalling 23,310 miles, and the U.S.A. with 2,818 daily runs totalling 151,077 miles, are ahead, though in each case, of course, over a much greater aggregate route mileage. The most notable additions to the fast runs on British Railways are those of the Western Region "Bristolian" and of the "Elizabethan" in the Eastern, North Eastern, and Scottish Regions. With the former the full prewar speed is restored, with a schedule demanding continuous 80 m.p.h. running over a considerable distance; the latter creates a world record in being the first run ever scheduled, with any description of motive power, of over 300 miles at more than 60 m.p.h. from start to stop.

Electrification Eastwards from Manchester

MANCHESTER now has electric suburban services radiating to the east, north, and south-west, and extending to Glossop, Bury, and Altrincham. Since last Monday multiple-unit trains have been running from London Road to Glossop and Hadfield, on the western side of the Pennines, their introduction having coincided with that of all-electric haulage of both freight and passenger trains between Manchester, Penistone and Wath. Another stage has thus been reached in the Pennine electrification scheme, of which the Penistone-Sheffield part remains to be completed. The interesting history of electrification in the Manchester district was referred to in our May 14 issue. The eastern suburbs and outlying districts through which the new electric trains run are perhaps fortuitously lucky in their new and much augmented service, for which they might not have qualified had they not lain on a main line of whose operating difficulties electrification was clearly the only solution. Some of the features of the rolling stock, which has been built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. and the Birmingham Railway Carriage & Wagon Co. Ltd., and has electrical equipment by the General Electric Co. Ltd., and of the suburban services are given on another page in this issue.

Diesel Haulage of Commonwealth Royal Trains

THE development of diesel traction in the British Commonwealth is shown in the extent to which the Queen's trains were diesel hauled during the recent Royal tour. In New Zealand both steam and diesel-electric locomotives were used, with electric traction through the Otira Tunnel. In New South Wales and Victoria the Royal train itself was hauled exclusively by diesel-electric locomotives, with a steam pilot engine. Over the Ceylon Government Railway, whose Royal train is described briefly elsewhere in this issue, diesel-electric locomotives were used where possible, that is, over the main-line laid with heavier track. The administrations concerned clearly wished to use the most suitable motive power at their disposal. The choice of diesel on these occasions is an indication of the reliability of this type of motive power and its suitability at least for express passenger working in the conditions obtaining

on the railways concerned. On some of the lines the Royal train had severe gradients to surmount and there were some fairly stiff schedules. Obviously the comfort of the Royal passengers, including the absence of dirt and coal smoke, was a consideration in the choice of diesel haulage.

Dutch-Built Rolling Stock for the Argentine

A DESCRIPTION is given on another page of the new broad-gauge rolling stock for the Argentine Railways which is being built by Werkspoor N.V. Amsterdam. The orders were placed in 1952 and the new stock has already been placed in service. The order consisted of both air-conditioned stock, the equipment for which was supplied by J. Stone & Co. (Deptford) Ltd., and non-air-conditioned stock for the broad-gauge; and metre-gauge carriages and diesel-electric locomotives. Part of the broad-gauge order was sub-contracted with Beijnes N.V. Beverwijk. The broad-gauge stock is heat insulated by sprayed Limpet asbestos. The bogie axleboxes are fitted with Skefko spherical roller bearings mounted on withdrawal sleeves. The exterior of all stock is basically similar and is designed with a flush exterior, as is also the interior of the passenger stock. Formica is used extensively, and the seats are of foam rubber covered with P.V.C. fabric. All interior fittings are of light metal construction and are anodised in natural colour.

Ten-Car Suburban Trains in the Southern Region

TEN-CAR trains are now running during the morning and evening peak periods between Charing Cross and Dartford via Bexleyheath, in the electrified suburban area of the Eastern section of the Southern Region. This is the first stage of a four-part scheme to run ten-car trains at such times from both Charing Cross and Cannon Street to Dartford by all routes, and to Sanderstead, Hayes, Addiscombe, Orpington, and Bromley North. New two-car units, combined with existing eight-car trains, give 186 more seats to a train. Considerable resignalling, alteration of track layout, and lengthening of platforms have been necessary. It will be recalled that in 1949 two four-car double-deck sets were put into service experimentally to determine whether such trains would help to solve overcrowding in the rush hour on these lines, but they have not apparently proved capable of meeting all requirements. It may be, as we surmised when the double-deck trains were introduced, that increased station stopping-time was one of the drawbacks militating against the extension of this admittedly praiseworthy experiment. There is no doubt that the new scheme with its use of orthodox rolling stock is a much more flexible solution from operating and other standpoints.

Fuel Efficiency in Traction

TRANSPORT featured in the paper on "Electrical Engineering in World Trade" by Sir George H. Nelson, Chairman & Managing Director of the English Electric Co. Ltd., which was presented to the British Electrical Power Convention this week, because of its importance as a factor in cost and distribution. The efficiency of the railways therefore has a bearing on our success in world markets. Sir George Nelson thought that the case for diesels was sometimes misrepresented in this country, partly by exaggerating the cost of diesel locomotives and partly by failing to allow for their high capacity for work and lower maintenance costs, and for the fact that they do not use fuel unproductively in preparation, standby, and blowing down. It appeared from fuel costs based on the locomotive exchanges of 1948 that only 5.85 million tons of the 14 million tons of best coal used by the railways annually were required for running all the freight, express, and mixed traffic on British Railways. General electrification could reduce overall consumption to 5.5 million tons of low-grade fuel. Generating efficiency figures for modern turbo-alternators, such as the 9,207 B.Th.U. per kWh. recently recorded at Uskmouth, suggest that railway electrification offers growing possibilities for the efficient use of fuel.

Pullman Service Continues

CONSENT to the acceptance by the Pullman Car Co. Ltd. of the British Transport Commission offer to purchase the whole of the company's ordinary share capital had been obtained earlier this week—there were over 95 per cent acceptances—and the sale will be concluded in the near future. Some details of the offer are given on another page. The contract with the British Transport Commission expires in 1962 and there is no chance of an extension. There was no prospect of any major increase in revenue to offset rising costs, which would have prejudiced the building of new cars in view of the very great rise in prices in recent years. In the circumstances, the offer is not unfavourable for Pullman shareholders.

The important point, and one that will give great satisfaction to the very large Pullman clientele in this country, as well as travellers in the company's cars and as passengers in ordinary coaches of British Railways who avail themselves of Pullman catering facilities in trains, is that the British Transport Commission intends no alteration in the control and operation of the Pullman cars. The Commission stated this categorically, adding that it intends "to give consideration to the extension of this popular facility on other lines throughout the country." This means that the high Pullman standard of comfort and cleanliness in the cars, of cuisine and refreshments generally, and of courtesy in the attendants, are to continue where they already are familiar, and, it is to be hoped, to be extended to passenger services in Regions of British Railways where, though at present comparatively little known, they cannot but be welcomed by passengers. Both in the ordinary rolling stock and in the refreshment facilities in trains provided by British Transport Commission Hotels & Catering Services, passengers over many lines of British Railways enjoy much comfort on their journeys. Pullman standards, however, generally are admitted to be something extra special. This is shown in the readiness of a considerable section of the travelling public to avail themselves of them, at extra charges which are reasonable for what is provided. "Pullman and perfection" is not a boast, but an aspiration which in many cases comes near being realised. Those outward signs of good service, the chocolate and cream livery of the cars, the Pullman coat of arms, and the blue and white uniforms of the attendants, presumably will continue.

The change in ownership comes 80 years after the inauguration in 1874 of the first Pullman service over a British railway; on June 1, 1874, by agreement between the Midland Railway Company and George Mortimer Pullman, who had started building his cars in the U.S.A. some 10 years before, a complete Pullman train began regular operation between St. Pancras and Bradford. So popular was the new facility that by the end of the year the Midland had 36 Pullman cars in operation, including 11 sleeping cars and, in 1876, Pullman services were extended to Edinburgh and Glasgow. The first restaurant car to be put into service in Britain was the *Prince of Wales*, a Pullman car introduced on the Great Northern Railway in 1879. The seating plan and even the types of chairs used were very similar to those still in use in Pullmans in this country. Pullman cars first appeared in the South, where they have since provided so many services, in 1875 when three cars were transferred from the Midland services and were run on the Brighton services of the London Brighton & South Coast Railway Company. In December, 1881, the first all-Pullman train to run in this country was introduced by the L.B. & S.C.R., the first train in this country to be fitted throughout with electric light. In 1887 the L.B. & S.C.R. entered into a contract with Pullman and this was followed in 1881 by a contract with the London Chatham & Dover Railway. In 1882 the Pullman Co. Ltd. was registered in England and continued in existence for the next 25 years. In 1907, Mr. Davidson Dalziel, later Lord Dalziel of Wooler, purchased the company and eight years later, in 1915, the present Pullman Car Co. Ltd. was formed to acquire Mr. Dalziel's interests. At that time the company owned 74 cars and also had others under construction in this country. The contracts with the railways

mentioned above were followed by those with the South Eastern, Metropolitan, Great Western, and Great Eastern Railways and the Great Southern Railway of Ireland. Not all of the services over these railways or their successors have survived; those for instance over the Metropolitan and the G.W.R. and the G.S.R. in Ireland no longer exist. In some instances the cars have been taken over by the railway administration concerned and converted as restaurant/buffet cars.

There have been many developments in recent years. The first all-steel train was introduced by the Pullman Car Co. Ltd. in May, 1928, with the "Queen of Scots" between Kings Cross and Harrogate over the L.N.E.R.; this was later extended to Glasgow and the service is still operated with two all-Pullman trains, one up and one down each weekday. The next year saw the inauguration of the "Golden Arrow" between London and Paris, with the Pullman services on the French side provided by the Cie. Internationale des Wagons-Lits. This continues, with some modifications, today, and the British train undoubtedly contributes to creating an excellent impression on the mind of the visitor to this country of British standards of workmanship and service. The "Golden Arrow" is foremost of the many Pullman services in the Southern Region as successor to the Southern Railway, which include, besides Continental boat trains, and ocean liner expresses to and from Southampton, the electric services between London and the South Coast.

Since the war, besides entering on an energetic programme of rehabilitation of its cars the Pullman Car Company, with British Railways, have inaugurated new services and added improvements to existing ones. The Transport Act of 1947 did not affect the company as a contractor to the Southern and London & North Eastern railways, though nationalisation has introduced new factors to the direction and operation of the company. In many respects functional control of British Railways moved to the Railway Executive and, notably in the catering policy, contact had to be maintained with the Hotels Executive through the British Transport Commission. Changes in the organisation of the railways may perhaps lead in the not too distant future to more direct contacts between the Pullman Car Company and the Regions of British Railways.

In the more technical sphere of passenger carriage design and equipment the company has been a pioneer. One of the most important improvements introduced and patented by the company was the enclosed vestibule and what is now known as buckeye interlocking coupling, adopted as standard by British Railways. Pullman cars were the first to provide large windows and these also have been adopted in all main-line coaching stock. In 1881 the first experiments in electric lighting were introduced by the company, and in 1908, gas was introduced for cooking in Pullman dining cars. This technical efficiency and readiness to adopt innovations is an essential part of the efficient organisation with its traditions of good service now to be placed at the service of an even greater number of travellers on British Railways.

April Traffic Trends

AFTER a promising start in January, forwardings of freight train traffic by rail declined steeply in the next 12 weeks. British Railways lost 119,000 tons in February, 517,000 tons in March and 549,000 tons, or 2·5 per cent, in the four weeks to April 25. No. 4, *Transport Statistics*, puts the total decrease during the 16 weeks in question at 832,000 tons, or nearly 1 per cent. Merchandise and livestock carryings were down by 134,000 tons, the decrease in April alone being 105,000 tons from 1953 and no less than 616,000 tons, or 14·5 per cent, below the April period in 1951. The advance return of traffic receipts for the four weeks to May 23 points to a further loss of high-rated traffic, for which road transport must be responsible. Road hauliers compete strenuously for the carriage of high-class merchandise and more traders are now installing fleets of road vehicles for the distribution of their own products.

A typical case was reported in *The Times* of May 28. The Chairman of Cerebos Limited advised his shareholders that all the firm's products sold to the retail grocery trade in Great Britain, with the exception of some of the remoter parts of Scotland, were now delivered by road. The firm had increased its transport fleet and in areas which its own vehicles could not serve employed contractors. These arrangements were said to result in quicker deliveries and to ensure that the packages arrived in good condition. Meanwhile British Railways are bound to accept consignments for outlandish places across the Border, though they may earn little or no profit from conveying the goods.

In the 16 weeks to April 25, British Railways carried 516,000 fewer tons of minerals, a decrease of 2·6 per cent, and 182,000 fewer tons of coal and coke, a small decrease of 0·3 per cent. There is evidence that road transport is beginning to make serious inroads into the volume of heavy traffics, such as minerals and coal, regarded as specially suitable for rail transit. The Mineral Managers of the former railway companies used to think that coal would never be diverted in any large quantity, but today some firms, with works located at a considerable distance from any colliery, receive the bulk of their fuel by road. Apart from these diversions, it was unfortunate for British Railways that coal output for the first 20 weeks of this year was 275,000 tons less than in the same weeks of 1953 and that coal exports failed to expand. Inland waterways likewise suffered from the sluggish state of the mining industry, losing 99,000 tons of coal class traffic in the 16 weeks to April 25, a decrease of 4·7 per cent.

British Railways worked 71,356,000 fewer ton-miles in the April period, a decrease of 4·1 per cent. Mineral ton-miles alone declined at the rate of 8 per cent. The North Eastern was the one Region to show an increase, owing mainly to an exceptional rise of 7·5 per cent in merchandise and livestock ton-miles. The North Eastern also worked 2 per cent more ton-miles in the 16 weeks to April 25, and was followed closely by the Eastern Region with an advance of 1·9 per cent, representing 28,533,000 additional ton-miles, spread over all classes of traffic. Ton-mileage in the London Midland Region was down by 89,102,000 (3·5 per cent), in the Scottish Region by 27,923,000 (3·7 per cent) and in the Western by 2,113,200 (1·6 per cent). It is a pity that the bulletin does not include operating statistics; it would have been instructive to see how the Regions dealt with the extraordinary fluctuations in traffic volume.

Over the first quarter of the year, passenger travel varied erratically. In January the number of journeys over British Railways decreased slightly. In February 2,699,000 more journeys were made and in March 435,000 more. The total increase for the quarter was 2,778,000 (1·2 per cent), with a corresponding increase in receipts of £487,000 (2·1 per cent). In the three months, the number of first class passengers was 4,975,000, an increase of 56,000 (1·1 per cent); receipts were higher by £129,000 (4·9 per cent), the average first class fare of 10s. 11d. being 5d. more than in 1953. The outlook for passenger business will be uncertain until results for the first six months of the year are known. April would appear to have been a fairly good month and May a rather indifferent one.

Signalling in the Netherlands

THOSE who attended the recent meeting of the Institution of Railway Signal Engineers in Utrecht and had been present on a similar occasion in 1929 at Amsterdam were in a position to appreciate how the tendencies operative in signalling in the last quarter-of-a-century had influenced practice in Holland, where a very high level of safety in train running has obtained for many years and well designed and maintained signalling equipment of somewhat distinctive character has been in general use since at least the early 1890s. An account of the Institution visit to Holland is given on another page. The existence of several separate companies, one of which worked the lines belonging to the State, led to a certain amount of variety in the

equipment and on one of them, having close financial associations with England, apparatus made by the once well known firm of Stevens of Southwark was installed. The nature of the ground in many parts of the Netherlands was not favourable to the success of rod working, of course used by Stevens for point operation. Eventually double-wire transmissions for both signals and points were universally adopted; they were used in all new work after 1880, but with simpler designs than those seen in the neighbouring country of Germany, where much thought and experiment had been devoted to that system. Distinctive types of double-wire apparatus were developed by Dutch engineers. Much use was made of trailable point movements, at least by some of the lines.

Block working, at first using telegraph messages, seems to have been introduced in the '70s, and in 1880 the a.c. magneto-generator type of lock-and-block, which spread so widely in Central Europe, made its appearance and remains the standard today, except where automatic signalling has supplanted it. The semaphore signal, usually giving the clear indication in the upper quadrant—only the Stevens installations following English practice at first—became general for all running movements; the distinction between stop and distant signals eventually was made by having the arms of the latter normally inclined downwards, so that a horizontal arm invariably indicated stop.

Like many countries Holland at first used red, green, and white lights for stop, caution, and clear and there the practice lasted until July 16, 1934, when, by a remarkable piece of organisation, the spectacle glasses throughout the entire system were changed in the one day to the red, yellow, green arrangement. The two large railway systems which, after absorbing one or two others, were themselves combined under an organisation initiated in 1917, exhibited some differences in signalling practice, especially in the manner of placing the signals, controlling shunting movements, and operating the block. From 1919 onwards, however, standardisation was applied in certain essentials and a uniform system of signal aspects adopted.

The very large number of level crossings requiring to be attended made it economic to adhere to manual block working but when the possibility of abolishing a number of gatekeepers offered itself following a change in the law, the position became different and in June, 1926, the first automatic signalling, using power operated semaphores and d.c. track circuits, was brought into use between Gouda and Oudewater, to be followed by several others. Later light signals made their appearance, and on electrified routes a.c. track circuits. Power interlocking installations, both electro-pneumatic and electric, appeared in the early years of this century and some large ones were made. That at Amsterdam was inspected by members of the Institution of Railway Signal Engineers in 1929 and is still in service. The individual lever system with mechanical locking was used and similar equipment is being fitted today. Before the last war, however, at the suggestion of a Netherlands engineer, a very compact form of frame with the operating handles arranged in no fewer than seven rows was developed and installed at one or two stations. It gave every satisfaction, but the design has not been continued.

The opportunity afforded by legislation in 1922 of dispensing with barriers at some crossings and installing some form of warning was taken advantage of and economies effected, but difficulties arose and public reactions led to a Commission reporting on the problem in 1929, and this resulted in the arrangements now in use, first installed at an unattended crossing in 1936. About 50 examples were in use towards the middle of the war, in the course of which very great damage was done to signalling generally. After the war, rehabilitation was tackled with initiative and determination and, with the help of materials from outside the country, a very great improvement was effected in a relatively short time, reflecting much credit on the Signal Department of the Netherlands Railways. With the restoration of the railway system went the programme of electrification, and of new works such as the raising of the lines through Eindhoven so as to get rid of the many level

crossings giving rise to so much hindrance to highway traffic and scarcely less of a nuisance to the railway itself, in a general effort to improve train services throughout the country. The opportunity was taken to apply new signalling principles and make a wide use of colour light signals and power interlocking. The many junctions had necessitated, with mechanical signalling, a great many signal boxes with heavy operating expenses.

An extension of power interlocking and track circuiting was thus in every way indicated and in the new Blauwkapel installation, close to Utrecht, which the visitors last month were allowed to see, an entrance-exit panel apparatus has replaced seven signal boxes. The general adoption of the colour light signal, especially desirable under the overhead system of electrification, offered the possibility of introducing an improved system of aspects, a question to which the then Signal Engineer, Mr. J. H. Verstegen, specially addressed himself. The result has been the adoption of a three-speed system of aspects involving no conflict with anything already existing on the line, as illustrated in our issue of March 7, 1952. Not more than one signalling colour is seen in any aspect and on no occasion does a red light have to be passed. As Mr. Verstegen had read a paper on this system before the Institution of Railway Signal Engineers in 1952, members attending at Utrecht were more readily able to follow its application to the installations they inspected or travelled past, in some of which they saw the old and new signals functioning alongside each other. They had further the advantage of hearing a lecture on them and the technical details of the work at Eindhoven from Mr. H. Wiemans, before entering the signalbox there. The present Signal Engineer, Mr. H. A. E. de Vos tot Nederveen Cappel, explained that it had been decided to embark on a programme of automatic signalling to cover all electrified lines—themselves a very large percentage of the route mileage in the country—and that considerable benefits, financial and operating would result therefrom. The work is to be completed in about nine years.

Serious accidents have long been rare on the Netherlands Railways, and the President, Mr. F. Q. den Hollander, whose kindness in providing facilities has placed the Council and members of the Institution under a considerable obligation, speaking at the conclusion of the meeting, stressed that they no longer needed to think of safety when studying signalling proposals. They took that for granted and then sought in all they did to raise the general operating efficiency of the line and increase the power of the Management to fulfil its essential purpose, to sell transport.

British Railways Traction Developments

THE entry of lightweight diesel trains into service in the West Riding last Monday marks the beginning of what promises to be an interesting and profitable venture by British Railways. Some of their advantages when used on suitable services were the subject of an editorial article in our May 7 issue, and are mentioned in a contribution by Mr. M. R. Bonavia, Chief Officer (New Works), British Transport Commission, to the current issue of the *British Transport Review*. The argument against placing more dependence on imported fuel loses some of its weight when it is understood how many of our large industries now depend on oil and that oil refining is becoming an important domestic industry. As a selling point in the present intensive competition between railways and other forms of transport, the cleanliness of the diesel and electric train must not be overlooked, particularly where there is need to regain lost traffic or attract new business.

The field is by no means exhausted with the first four areas selected—West Riding, West Cumberland, Lincolnshire, and Edinburgh-Glasgow—and, besides a possible Birmingham-South Wales service to which we alluded in our earlier editorial, Manchester-Liverpool might be a promising ground for the multiple-unit diesel train. There is as yet no comparable programme for the widespread introduction of diesel locomotives on main line service. The two former L.M.S.R. and two former Southern Rail-

way Co-Co diesel-electric locomotives now working on the Western Section of the Southern Region have now been joined by a fifth locomotive, the 1-Co-Co-1 described in our May 28 issue. The Fell diesel-mechanical locomotive is still undergoing tests on the London Midland Region line, based on Derby, and, as with the five diesel-electric units and the two gas-turbine locomotives of the Western Region, considerably more experience in service will be needed before further development can be expected. One of the difficulties of using diesel or gas-turbine locomotives more widely in this country, with its runs of limited distance, is that of finding sufficient workings to permit mileages per annum high enough to offset their high first cost, which is three or four times that of a steam locomotive of comparable power. This was one of the observations made by Mr. R. C. Bond, in his presidential address to the Institution of Locomotive Engineers last year. For shunting the advantages of the small diesel locomotive of 350 h.p. or less have been recognised and a five-year programme provides for superseding 635 steam locomotives by 573 diesel-electric and diesel-mechanical locomotives by 1957.

The summer timetable is notable for another innovation on British Railways, the introduction for the first time on any main line in this country of electric haulage of all trains. The line is the Manchester-Penistone section of the former Great Central Railway, with its long ascent of the Pennines from east and west. Though the scheme has been carried through mainly in the interests of improving freight movement over this difficult and congested route, passenger working will benefit.

In appraising this progress in both diesel and electric traction, the predominant part still played—and likely to be played for many years—by the steam locomotive in this country must not be lost sight of. Modifications to the front end, reduction of coal consumption and mechanical failures, and measures to increase the mileage run between repairs have contributed much to improve its efficiency and usefulness. Its ability to adapt itself readily to traffic conditions make it unlikely to be displaced within the foreseeable future. The gradual reduction of classes as a result of the standardisation policy will tend still more to economy, both in construction and repairs. Almost all the standard types are mixed traffic, which will make for still wider availability and more intensive user. Mr. Bond quoted in his paper interesting figures in this connection; he said that nearly one-third of the 19,000 locomotives of British Railways were suitable for, and used quite impartially on, a very wide range of services, and for much of the 25 per cent increase in miles per day per engine they deserved the credit. The percentage of steam locomotives under or awaiting repairs has decreased from 9·11 in 1928 to 5·02 in 1952, and, on an average, the time needed to complete a general repair has been halved, and this notwithstanding the greater size of locomotives and the fewer hours worked.

From these statistics and the possibility of achieving an average mileage in excess of 100,000 miles between heavy repairs it is clear that the steam locomotive in this country is by no means at the end of its potentialities and that its further development may confidently be looked for, along with that of the newer forms of motive power.

Transport Legislation in Western Germany

TWO bills which will revolutionise the relative position of road and rail transport were recently approved by the Federal Cabinet of Western Germany. If they are subsequently approved by the Federal Parliament and Federal Council they will weigh heavily against road transport. The first of these bills, the Road Relief Bill, provides that the long-distance transport of certain commodities by road shall be prohibited. Among the goods concerned are ore, stone, coal, slag, cement, and concrete and ferro-concrete and bulky steel products, pit props and other timber, grain, and sugar.

The second bill, the Transport Finance Bill, is an alternative to the original proposal of the Ministry of Trans-

port to prohibit the long-distance delivery of goods from factories by road. It does not prohibit such delivery but raises punitive taxation against it; and it provides for a revision of the taxation on road freight vehicles, including a sharp increase on all heavy lorries. At the same time the taxes on road vehicles of other types will be reduced by 20 per cent. These measures are expected to produce an additional DM. 50,000,000 a year. The transport tax is to be extended to road vehicles conveying freight within a 50-km. limit, including traders' own vehicles. This type of transport has not been taxed previously. The transport tax, to which the German railways are also subject, is at a rate of 7 per cent. Long-distance delivery of goods from factories by road is to be subject to an increase in taxation of over 400 per cent. The present rate is pfg. 0·99 per tonne-kilometre, and this is to be raised to pfg. 5·0. The estimated increase in annual revenue is DM. 130,000,000. In addition, the price of mineral oil is to be raised by pfg. 1 per litre, and the cost of petrol by pfg. 7 per litre. Increased subsidies are to be paid, to offset this, to agriculture and inland water transport. The increased fuel prices are estimated to yield a further DM. 160,000,000. A spokesman of the Finance Ministry has said that the aim of the Government is to improve the competitive position of the railways by increasing the working costs of road traffic.

There have been protests from the West German traders' associations about these proposals. The road transport industry, it is said, is not in a position to bear the charges which would be placed upon it, furthermore, as freight charges represent an integral part of the price of goods, there would be a general rise in price levels. The Federal Railway budget for 1954 has been approved in principle by the Cabinet and the railways have been able to place long-delayed orders. These orders amount to some DM. 750,000,000, about DM. 175,000,000 of which are required for permanent way renewals. While the decision of the Cabinet is not necessarily final, it should suffice to make the railways solvent, as a backlog of DM. 100,000,000 has accumulated during the first months of 1954. No decision has yet been reached on means of covering the Bundesbahn deficit of DM. 800,000,000. The decision of the Cabinet has been influenced by the necessity of placing early orders with suppliers, particularly the steel industry, as a matter of policy. Further developments must wait upon the examination of the new bills by Parliament and the Council.

Letters to the Editor

(*The Editor is not responsible for opinions of correspondents*)

Lodging Turns

June 12

SIR.—I refer to the editorial article in your issue of June 11. One wonders whether the railway management has exhausted its survey to see whether lodging turns cannot be brought to a lower level by a new approach to the matter; for instance, by changing crews other than at the recognised lodging centres, altering train services to fit in with day return working, reducing freight loading by shorter trains, thereby giving faster services, and on Saturdays, in connection with the industrial five-day week, by reducing local freight services to give more train crews their rest day on that day, without prejudice to public requirements.

May I suggest that new lodging hostels be not proceeded with, the general aim being that by less lodging and reduced expense in maintaining hostels, expenditure on both may be reduced?

Yours faithfully,

ROBERT W. LEWIS

Beth-el, 104, Leggatts Way, Watford

[All the points raised by our correspondent have been considered at various times by British Railways, but the survey clearly cannot be said to be "exhausted," as these matters are constantly under review.—ED., R.G.]

THE SCRAP HEAP

Delivery Before Collection

A harvester arrived at Thurso Station to await collection by a farmer. A pair of thrushes built their nest in the spokes of the main wheel and four eggs duly appeared. The station staff reported that four youngsters had been hatched, happily oblivious of the fact that their future depended on the turn of a wheel.—*From "The Scotsman."*

Locomotive in Stone

A correspondent has sent a photograph, reproduced in the accompanying illustration, of a stone carving of an early locomotive, suggestive of a "Coppernob," and train flanking the entrance to a soap factory near Huddersfield.

The carving is in a fine state of preservation and forms one of a group

British hotels, according to this tourist, are "coming back rapidly, and they are not expensive. Anyone prejudiced about hotel rooms which require a stroll down the corridor to the bathroom quickly overcomes this antipathy."

C.N.R. Salute to the Armed Forces

One of the attractive coloured menu covers of the Canadian National Railways Dining Car Department commemorating the Coronation was illustrated in the Scrap Heap for July 3, 1953. Another menu cover, featuring a topic of national—and British Commonwealth—interest, the Canadian armed forces, as a special salute to the Department of National Defence, is being used in C.N.R. restaurant cars this month. The design and wording were produced

the world; the invention of pick-up water troughs which alone made possible long-distance express running; a long series of engines which for speed, reliability, and power had no rivals; the foundation of the earliest and perhaps the best known of all Mechanics' Institutes, and, with this, an honourable place in the long roll of the pioneers of adult education. Some railways historians have called Ramsbottom a "cold-hearted go-getter," and certainly he was appointed partly because he had a reputation of being firm with his men . . . But the epitaph was unjust. He was firm, but he was also kind and generous. One thing he did was to give £1,000 out of his own pocket to found a scholarship at Owens College, Manchester (as it then was called), for the technical education of his brightest young fireman.—*From "The Manchester Guardian."*

Train as Grandstand

When all tickets for the Germany versus Hungary football match at Basle had been sold, a firm of sports outfitters is reported to have chartered a train to stand on the line running past the stadium on an embankment. The train was composed of coaches with big windows, and refreshments were served from kitchen compartments.

This is believed to be one of the few instances of a train being used officially as a grandstand, though unofficial use is frequent—as of the train of empties on a siding adjoining the Grand National course at Aintree, so often seen in newsreels and Press photographs.

Wistful Thinking

(*The Minister of Transport is now considering the latest scheme for the re-organisation of British Railways*)

Well, whither now, my ancient pals,
What's next in store for you?
How looks the new horizon from
Your jaded point of view?

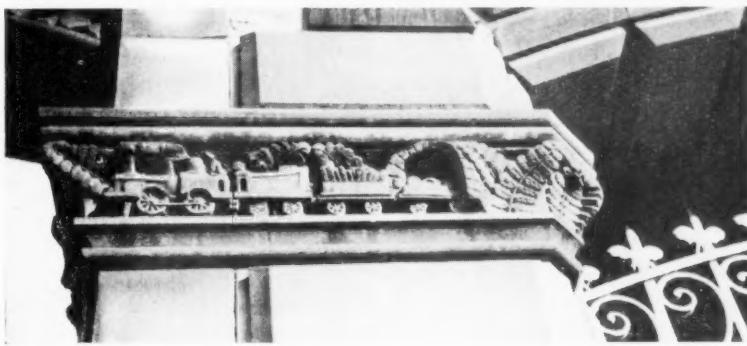
By far from uneventful ways
We've struggled through, so far,
With only hope's undying spark
To serve as guiding star.

Pray that the latest *tour-de-force*
This time will do the trick
And not leave British Railways with
The wrong end of the stick.

How nice, if we could really find
Plain sailing after storm
And peacefully rely upon
Some settled sort of norm!

Then might we even dare to hope
In due course to enjoy age
And share with Maestro Mendelssohn
"Calm Sea and Prosperous Voyage."

A. B.



Photo]

[W. B. Stocks

Locomotive and train carved on pillar flanking entrance to soap works at Aspley, Huddersfield

of carvings round the walls of the factory, each depicting a means of transport. This carved locomotive is of particular interest in relation to the carved locomotives on Berry Brow Station near Huddersfield, of which a photograph by the same correspondent was reproduced in our October 12, 1951, issue.

Gnats Stop Train

A swarm of gnats stopped a train for 90 minutes on the Storstrom Bridge, the longest in Europe, linking Zealand and Falster, Denmark. They made the track so slippery that the wheels would not grip until sand was used.—*From "The Daily Telegraph."*

Praise for British Railways

Mr. George Horne, travel editor of the *New York Times*, recently praised British hotels, railways and highways. Of the railways, he said: "The dinner service is excellent. Only one meal on my entire series of journeys was less than adequate.

"The first class carriages are comfortable and the trains are extraordinarily smooth. They still compare favourably with United States stock."

by the C.N.R. Public Relations Department in Montreal in collaboration with the Canadian Minister of National Defence.

The cover depicts the heads of a typical Canadian sailor, soldier, and airman against a background showing aircraft, an aircraft carrier, and tanks. A message on the back reminds dining car customers that, for the first time in peacetime history, Canadian sailors, soldiers, and airmen are on active duty overseas as well as in Canada. The message points out that the Forces need intelligent and ambitious young men of every skill and occupation, and ends with a tribute to Canadian servicemen.

John Ramsbottom

The old Ramsbottom saddle-tank (presented by Imperial Chemical Industries Limited to the B.T.C. See *The Railway Gazette* for June 11) is to run under its own steam to Crewe, and . . . it is to be hoped that a plaque will be put up near it to tell visitors something of the great man who built it. It would have to be a big plaque.

All these things would have to find a place on it: The growth of Crewe from a hamlet to the greatest railway town in

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

EAST AFRICA

Revenue

The approximate total railway revenue during the first three months of 1954 was £3,746,000, slightly in excess of the estimated revenue. Earnings from goods traffic were approximately £2,965,000 and from passenger traffic approximately £321,000.

In spite of more difficult operating conditions imposed by Emergency demands, goods traffic has continued to move well and earnings have been up to expectations. By the end of March, 150,525 tons of goods had been sent to Mombasa Island compared with 156,436 tons in the same period last year. The tonnages of cotton, coffee, groundnuts, soda, pyrethrum, and tea recorded substantial increases which were more than offset by decreases in cottonseed, timber, grains and flour.

Passenger traffic has yet to recover from the full effects of the Emergency in Kenya and the earnings from this traffic are still less than expected. On the Central Line in Tanganyika additional coaches now coming into service should stimulate passenger earnings.

Traffics in April

Railway revenue during April was £1,176,400. Passenger revenue was some £12,600 less than in 1953 and there was a slight decrease in revenue from catering services. Earnings from coaching traffic and livestock traffic showed small increases.

Goods traffic moved well during the month in spite of operating difficulties occasioned by the Emergency in Kenya and although earnings were not up to expectations, in the prevailing circumstances the position must be regarded as satisfactory. Movement of the principal export goods was maintained at a comparatively high level and the year to date figures for coffee, cotton, tea and sugar show appreciable increases over the figures for 1953. Traffic forwarded from Mombasa Island was 5,000 tons greater than in April last year, but was less than in March this year.

On the Central Line tonnages by rail to Dar es Salaam for April, 1954, were again at a low level though the tonnage of sisal received at the port was higher than in any previous month this year. The relatively high level of traffic railed to Tanga was maintained, the April figures being more than 1,000 tons greater than in March this year. By the end of the month the total quantity of sisal received by rail at Tanga during 1954 was 25,709 tons some 6,000 tons more than in the corresponding period for 1953.

Passenger traffic still shows no tendency to increase and earnings from this source are disappointing; nevertheless, with the arrival of the new passenger coaches some improvement is expected

in future months and with the extra services which it is hoped will be introduced later in the year and the higher rate of spending amongst the African population, assuming better crops in Tanganyika than last year, there is every prospect of the 1953 level of earnings being achieved by the end of the year.

RHODESIA

Bulawayo-Wankie C.T.C.

More than £500,000 will be spent in the next two-and-a-half years on the equipment of centralised train control between Bulawayo and Wankie. It is estimated that the introduction of C.T.C. working will almost double the traffic capacity of the line.

This will be the second section of line to operate under C.T.C. working, the first having been completed between Bulawayo and Gwelo last year. The new section, 207 miles in length, will be one of the longest single sections in the world to be brought under C.T.C. control, certainly the longest in the Commonwealth.

Technically the new section will operate from Mpopoma (three miles from Bulawayo) to Mbarira (the new Wankie station). To reduce the possibility of line failures it will be "split" with the control centres established at Sawmills and at Dett. Sawmills will control all traffic from Bulawayo on the south-eastern section, and Dett, all traffic north-west to Mbarira. Signal stations will be established at both Mpopoma and Mbarira.

At the outset, constructional operations will be centred on Dett with the first section being pushed south-east to Gwai. Construction on the Dett-Mbarira section will follow almost immediately.

NEW ZEALAND

Main Trunk Line Electrification

The Minister of Railways has said that there has been no change in the general policy on main line electrification, but that advisers insist that there must be a certain density of traffic before electrification can be economic. The decision to use diesel locomotives on the Rimutaka line did not indicate the abandonment of the Government's intention fully to electrify the main trunk line in the North Island. Any suggestion that the underground railway scheme for Auckland had been abandoned was also premature. The report on this was under consideration.

Rimutaka Tunnel Working

The Minister of Railways has announced that the new tunnel under the Rimutaka Mountains is not to be electrified. Railcars will be used

for passenger traffic and diesel-electric engines for all goods trains. The electrification of the Hutt Valley line will not be extended beyond Upper Hutt, which is not far from the Wellington portal of the tunnel. It would not be economical, he said, to extend electrification 16 miles from Upper Hutt to Featherston; electrification could be considered when traffic justified, but that would not be for many years. Meanwhile diesel traction would bring substantial savings.

The use of diesel traction beyond Upper Hutt meant a saving of £270,000 on the capital expenditure necessary to provide overhead structures, substations, and electrical equipment for electrification to Featherston. Furthermore, said the Minister, in operating the Wairarapa line between Wellington and Woodville there would be an annual saving of £19,000 in adopting diesel traction beyond Upper Hutt compared with beyond Featherston.

The new 88-seater railcars, which could be operated in multiple up to three units seating 264 passengers, would be suitable for handling all passenger traffic on the line. Goods traffic, approximating 4,000 tons daily, would be handled by eight trains each drawn by a 750 h.p. diesel-electric locomotive. Only three locomotives would be required for the traffic and it would not be necessary to purchase any locomotives in addition to those on order.

CANADA

Decline in Freight Loadings

Canadian freight car loadings dropped 24 per cent in the second week of April to 59,245 cars from 78,862 a year before. The Dominion Bureau of Statistics attributes this mainly to the incidence of the Easter holiday this year. Cumulative loadings from the first of the year were 1,028,850, 9 per cent down from 1,131,303 in the corresponding period of 1953. Grain and timber freight loadings were all lighter this year.

White Pass & Yukon Railway

The White Pass & Yukon Railway Corporation Limited has raised \$918,750 in London towards a two-year \$3,000,000 modernisation programme. This will include replacement of steam locomotives by diesels, freight vehicles of greater capacity, and the introduction of metal containers of 10-20 tons capacity to facilitate the through handling of freight.

Atomic Locomotives

Mr. W. G. Miller, Executive Vice-President of Montreal Locomotive Works, has stated before a meeting of the Inter-Departmental Educational Association of the Canadian National

Railways that there is a possibility of atomic locomotives in the future, if someone can be found to foot the bill. The first one, he states, will be impractical. Steel shielding 4 ft. thick, weighing 200 tons, would be required around the atomic pile. In the experimental stage one lb. of uranium will be necessary for fuel every three months, at \$9,000 a lb.

UNITED STATES

Control of the New Haven

After a shareholders' meeting which began at 2 p.m. on April 14, and lasted, with ten adjournments, until 7.30 a.m. on April 16, Mr. Patrick B. McGinnis was elected President of the New York, New Haven & Hartford Railroad in place of Mr. Frederic C. Dumaine, Jnr., who has been the executive head of the New Haven since June, 1951. The change is the outcome of a lengthy and at times bitter battle between supporters of the previous directorate and a party, which included some former New Haven directors, led by Mr. McGinnis.

Interest in the contest is shown by the fact that 96 per cent of the eligible stock actually took part in the voting, and in the narrowness of the majority obtained by the McGinnis party, which amounted to no more than 1 per cent of the votes cast. This was sufficient, however, for Mr. McGinnis to be able to claim the appointment of 11 out of the 21 directors, and so to secure a majority. Mr. Dumaine remains on

the board, and has publicly stated that he will support any policy that in his judgment will help the New Haven. Meantime, however, suits have been filed by both parties challenging the validity of some of the proxy votes.

Among the ambitious proposals of Mr. McGinnis is one to run a non-stop passenger service with a "Talgo" train over the 229 miles between New York and Boston, which would entail an average speed of 91·6 m.p.h. over a congested route, with many speed restrictions. The present fastest time, made by the "Yankee Clipper" and the "Merchant Limited," is 4 hr. each way.

BRAZIL

Sao Paulo Railways

The five railways under Sao Paulo State control registered an overall deficit of 98,000,000 cruzeiros (£1,960,000) in 1953, compared with one of 68,000,000 in 1952. The following figures show, in millions of cruzeiros, the revenue and deficit of each line last year and, in brackets, the deficit in 1952: Sorocabana, 2,202 km., revenue 954, deficit 20 (2); Araraquara, 417 km., revenue 87, deficit 48 (39); Bragantina, 107 km., revenue 6, deficit 9 (8); Sao Paulo-Minas, 180 km., revenue 4, deficit 12 (11); Campos Jordao, 47 km., revenue 3, deficit 9 (8).

The Sorocabana undertook much new work in 1953, including the connection of Sao Paulo City with Santos by a line parallel to the Pinheiros River,

to be inaugurated this year; the extension from Presidente Prudente, across the Paranapanema river, for an eventual link with Paraguay. Two new lines are planned, from Juquira to Eldorado, via Registra, and from the port of Cananeia to Ourinhos. The Sorocabana acquired 20 diesel-hydraulic locomotives from Krupp in 1953, of which 12 have been delivered, and has now called for tenders for a total of 1,500 wagons and 20 electric train units for suburban traffic.

AUSTRIA

Waiting Room for Children

A waiting room for children and young persons is to be opened at Innsbruck Central Station. It is the first experiment of this type to be made by the Austrian railways. In this waiting room students waiting for trains to return home may do their homework, read the books of the library provided and play games. The provision of a similar room at Graz is being considered.

Longest Chair-Lift in Europe

The longest chair-lift in Europe has been brought into service from Klachau-Tauplitz to Tauplitzalm. The difference in altitude is 730 m. The lift, with a total length of 4,000 m., is divided into two sections with a station halfway; it can operate at two different speeds: 2 m. or 1·4 m. per sec. Three hundred and seventy seats, provided with supports for the skis and a protecting roof, follow the wire which is supported by 47 pylons.

Publications Received

Locomotive and Train Working in the Latter Part of the Nineteenth Century.—By E. L. Ahrons. Vol. 6. Cambridge: W. Heffer & Sons Ltd. 9 in. x 6 in. 77 pp. and 24 pp. illustrations. Price 12s. 6d.—This is the sixth and last volume of the series of articles by the late E. L. Ahrons, which appeared in *The Railway Magazine* between 1915 and 1926. It embraces the principal 5-ft. 3-in. gauge railways of Ireland, and affords a comparison with the standard (4-ft. 8½-in.) gauge lines described in the earlier volumes. Besides the record of locomotives and train working, descriptions are given of the unusual form of vacuum brake used by the Great Southern & Western Railway, and the peculiar track layout at Limerick Junction. The illustrations have been carefully chosen to include a wide variety of locomotive types.

British Engineers' Association Classified Handbook of Members and Their Manufactures. London: The British Engineers' Association, 32, Victoria Street, S.W.1.—The 1954 edition includes a comprehensive list of manufacturers with more than 3,000 headings in English, French, German, and Portuguese, classified to be of maximum help to purchasers of engineering

equipment. Another section gives the trade names and marks of many manufacturers of engineering equipment. As has been the case for the past twenty-five years, copies of this Silver Jubilee edition of the Association handbook will be received gratis by selected buyers and agents in every country which has business with the British engineering industry.

Travel Demands Comfort.—J. Stone & Co. (Deptford) Ltd. has produced an attractive booklet of 24 pages in which are featured illustrations of rolling stock running on railways in all parts of the world—from Argentina to Norway and Australia—for which it has supplied air-conditioning equipment. The publication shows in striking fashion the spread of air-conditioned travel by rail. It says that one overseas railway operating Stone-Carrier air-conditioned coaches has been able to increase its fares to a point above the rates charged by a competing air service, and still operate to capacity on every journey. Some of the illustrations in colour have appeared in the firm's advertisements in this journal.

Arc-Welding Rectifiers.—The Quasi-Arc Co. Ltd. has issued an illustrated circular, No. T.C. 698, which describes its d.c. arc-welding rectifier MR.375,

said to be the first of its type introduced in this country. The circular sets out in detail the advantages obtained from its use, and includes character V./amp. curves and a table showing typical test results in power consumption as compared with motor generators. A complete specification also is included, as well as a description of the portable current-selector unit, which provides complete remote control.

Wheels and Axles.—A four-page leaflet gives illustrations and brief particulars of a dozen different types of wheel-and-axle sets for steam and electric locomotives and railway rolling stock, as a selection of the wide variety made by Ruhrstahl A.G., at its Heinrichshütte works, Hattingen-Ruhr, Germany.

Italy. The C.I.T. Guide to Italy. Rome: Centre d'Information des Chemins de Fer Européens, Fabbricato Frontale Roma-Termini. 6½ in. x 4½ in. 330 pp. No price stated.—The guide is well produced with many maps and illustrations in colour. A chapter on facts and figures gives a clear and useful picture of the country as a whole, and each region has a chapter to itself which includes street plans of the larger cities. There are special chapters dealing with entertainments, festivals, Italian cookery, and so on.

Congress Discussions on Track and Electrical Problems

Work of the Fifth Section of the Sixteenth International Railway Congress

THE International Railway Congress, which held its sixteenth session at Church House, Westminster, from May 19 to 26, is divided in five Sections which have, broadly speaking, as their field civil engineering (Section 1); traction and rolling stock (Section 2); operating and signalling (Section 3); general questions (Section 4); whilst Section 5 hitherto has been designated as concerned with "light and colonial railways." For the Sixteenth Session, however, it was concerned with two questions: No. 10, the wear of rails on curves, and No. 11, protection against accidents of an electrical nature.

The characteristic form of wear on rails on curves, considered under Question 10, was the subject of the first summary prepared by Monsieur L. Ripert, of the Société Générale des Chemins de fer Economiques (France), Special Reporter. This gave rise to some considerable discussion by Section 5. The basis of the report was the replies on current practice on their systems, summarised in our issues of March 5 and May 7. Some European administrations had mentioned that wear on the running surface of the outer rail resulted in a plane tilted some 3 deg. to 8 deg. out of horizontal, whereas Mr. Venkataramayya, of the Indian Government Railways, Joint Reporter, said the replies he had received gave a range of 2 deg. to 5 deg. This difference was not resolved in the discussion and the summary was adopted without change.

Lateral Wear

The second summary, dealing with characteristics of tracklaying considered to have the greatest influence on wear of rails on curves, included a statement that lateral wear was particularly marked in curves with radii of less than 600 m. (656 yd.) standard gauge and 350 m. (383 yd.) metre gauge. These figures were questioned by Monsieur Meunier, of the Djibouti-Addis Ababa Railway, who thought that the impression might be conveyed that any metre gauge track with a curve of 350 m. radius should be avoided. Some delegates were in favour of either reducing or deleting the figures, but eventually the summary was adopted without alteration.

There was no discussion on the third summary, which dealt with the features of rolling stock which have a predominant influence on the wear of curved rails. It was adopted, as was No. 4, concerned with the effects of locomotives and motor coaches with driving bogies. One delegate mentioned that the lateral wear of rails is reduced when the lateral play of the carrying axle in three-axle bogies is suppressed.

There was some discussion on summaries Nos. 7 and 9. Several delegates from French African railways were of the opinion that check rails

were of value only as a safety measure. Although Mr. Venkataramayya strongly held the view as stated in the original summaries, it was decided to delete any reference to check-rails in Summary No. 7, and to limit the first sentence of No. 9 to state that they are laid along "certain particularly sharp curves to increase safety."

A suggestion to amend the Seventh Summary to read "alteration of widening of gauge" for "reduction in widening of gauge" was adopted in order to remove the impression that unlimited reduction in gauge is possible.

Reversing Rails End to End

Subsequently, the practice of turning rails end to end so as to extend their lives was discussed. Although this method is used by some administrations, there are serious practical difficulties and it was agreed to append the phrase "It appears that reversing the rails end to end is of least interest."

Summary No. 7, as amended, reads as follows:—

"To combat wear of rails in curves, the following methods are adopted:

alteration of widening of the gauge, and modification of the super-elevation;

use of rails with a high resistance to wear;

lubrication of rails.

"On several railways, the life of rails is extended where one lateral face of the head is worn by reversing them end to end, by changing them over to the other line of rail, or by relaying them in tracks of less importance.

"It appears that reversing the rails end to end is of least interest."

Brittleness of Rails

In the discussion on Summary No. 10, the brittleness of steel rails with high manganese content was mentioned by Mr. Schäder of the Swedish State Railways, who said that on his system breakages during severe winters are as much as doubled by the use of this steel, as compared with ordinary quality steel. M. Broca, French National Railways, added that heat-treated rails are also brittle in low temperatures. It was also pointed out that bi-metallic rails are expensive.

Mr. Klaren, of the Office de Recherche et des Essais (I.U.R.) stated that the Netherlands Railways use rails of low content manganese steel on straight and curved tracks and their experience is that the higher price of these rails is more than offset by the increased life. The last sentence of the summary was, therefore, amended to take all these points into account.

Rail Lubrication

Monsieur Masseron, Sfax-Gafsa Railway, raised a point on the shearing

off of the pistons on P. & M. lubricators by the electro-magnetic braking equipment fitted to rolling-stock. He stated that the profile of rolling-stock between the wheels is not generally defined, and that this was an omission which should be rectified. His suggested insertion was agreed: "These lubricators having to clear the gauge of the electro-magnetic brakes, it follows that it would be useful to have this gauge defined."

The meeting was continued with a discussion on the gauge widening of tracks on curves. Monsieur Hirzel, Swiss Government delegate, said that extensive experiments on curves of 100 metre radius (metre gauge) of the Rhaetian Railways had shown that rail wear was not increased when normal gauge width was employed. Delegates from French African Railways gave evidence to the contrary. The later introduction of lubrication on the latter systems was suggested as one possible explanation of this.

The difficulties of track design when both steam and electric stock is employed was discussed, and it emerged that gauge widening seemed essential for the former but not for the latter. The President of the Section, Monsieur Vrielynck, Belgian National Light Railways, suggested that this was probably the result of differing wheelbases.

Electrical Problems

The protection of electric overhead cables, substations, rolling stock and so on, against accidents arising out of use of electric power, was discussed after Monsieur de Boeck, Belgian National Light Railways, the Special Reporter, had read his summaries. The replies of railway administrative to the questionnaire on this subject were dealt with by Monsieur de Boeck and by Mr. T. S. Pick; summaries of their replies were given in our issues of March 19 and April 30, respectively.

The only contribution from delegates which affected the summaries was by Monsieur Walter, French National Railways. He proposed, inter alia, to amend the second sentence of Summary No. 15 to read: "If a protective device against loss of vacuum is installed, the action should be the same as for ignition failure." Mr. Pick strongly contested this statement, adding that in London Transport, all pumped converters, whether at attended substations or not, are cut out when there is loss of vacuum, whereas for ignition failure only an alarm system is used.

On another summary, Mr. Pick remarked that high-speed breakers are used on the London Transport 600-V. system, and so the summary was amended to read: "On d.c. systems of 1.5 kV. or less, ordinary circuit breakers can be used . . . and fuses can also be used."

Long Welded Rails

Reasons for the extension of their use in France

IN the opinion of Monsieur Robert Levi, Directeur des Installations Fixes, French National Railways, the only way to avoid the many disadvantages of the orthodox jointed form of track is, as he puts it, "firmly to reject the dogma of free rail-expansion" and eliminate as many joints as possible by welding. On the other hand, if very long welded rails are substituted important safeguards are essential.

If variation in rail-length is prevented, considerable stresses must be set up in the rail when the temperature rises or falls appreciably. For instance, if a rail unstressed at 20° C. is heated up to 60° C. it ought theoretically to expand by 0.00042 of its original length, but if this expansion is completely prevented, there should be a compression stress in it of $0.00042 \times 21,000$ (the coefficient of flexibility), or 8.8 kg. per sq. mm. Though small compared with the resistance of the steel to breaking, the resulting stress in both rails will be about 100 tonnes, and being in compression may lead to buckling.

There is reason to believe, however, that the actual stress is less than the theoretical figure, and that seasonal temperature fluctuations give rise to what M. Levi describes as "adaptation phenomena," resulting from the action of thermic stresses over a period of months, probably aided by bending stresses due to repeated wheel loadings. He surmises, therefore, that some kind of flow takes place in the metal, which tends to return to the neutral state without changing its dimensions. Experiment seems to confirm this theory in explanation of the reason why rises in temperature do not cause buckling except at the first impact of seasonal heat.

Buckling in Jointed Track

As tending to show that the stresses stored up in the rails as a result of temperature changes need not be feared even if the "breathing" of the rails is prevented, Monsieur Levi points out that although buckling has not been observed in long lengths of welded rail, it does sometimes occur in ordinary jointed track, doubtless due to creep having been allowed to close up the gaps while the temperature was normal and before a sudden rise in temperature. Moreover, in theory, vertical buckling is induced by concentration of compressive forces in the head of the rail, a condition not found in welded rails. This theory is partly confirmed by practical experience and proves that normal rail-joints may be bad expansion joints.

The risk of fracture due to tension is not in itself serious, but tension is liable to assist breakage in a deeply-fissured rail, which is also rendered more brittle by the low temperature causing the tension. Wear on long welded rails may, therefore, be expected to speed up the

appearance of transverse fissuring and fracture accompanied by the springing apart of the two pieces of the rail at the point of fracture. The standard types of doubly-flexible rail-to-sleeper fastenings in use on the French railways—described in our issue of March 26—acting as multiple rail anchors equally effectively in both directions, are among the most efficient deterrents to this liability.

Another possible objection to welded rails is their abnormal rigidity and the fear that this might accentuate wheel-hunting. In practice, however, hunting oscillations are generally dissipated by irregularities in the alignment and level of the track and, in any case, excessive rigidity is corrected by the flexible fastenings; they also have a damping effect on flange side-thrust.

Expansion Joints

Comparatively short lengths of welded rail not only require some anti-creep anchorage, but the reduction in the number of joints they secure is offset by the increase in the size of the gaps at their ends; for 100-m. rails the gaps may be several centimetres in width. The French railways therefore use only very long lengths together with joints allowing for a large relative movement between the rail-ends. The length is, in fact, governed by maintenance and transport considerations, and experience has dictated 800 m. as a suitable length. With it, an expansion joint of the sliding switch-blade and stock-rail type is used, allowing of a relative movement of up to 7 in. between the rail-ends. Practice confirms the theoretical average rate of expansion of 1 mm. per 1° C., and in each of the two rails abutting at a joint the average length of it that may be subject to "breathing" is about 95 m. measured from the joint. In rails of over 190 m. in length, therefore, there are, theoretically, middle portions of rail which are considered as fixed.

Welded Track on Curves

Though long welded rails have hitherto been considered suitable only for curves of 800 m. rad. and easier, tests of track with a "derailer wagon" have shown that both the "mixed-type" concrete and metal sleepers with double-flexible fastenings offer greater resistance to lateral thrust than do wooden sleepers. This is especially the case with the mixed-type concrete sleepers, with their massive blocks under the rails connected by tie-bars, for the ballast between the blocks adds greatly to this resistance. It is therefore confidently hoped that long rails will be permitted on sharper curves in future. The "derailer wagon," designed for studying conditions under which derailment is likely to occur, has carrying

axles at each end and a central testing axle which is simultaneously subjected to known vertical and horizontal thrusts.

The French railways use arc-welding plant equipped with special finishing devices, in the shape of precision grinding and truing units working in both plan and profile, assisted by hydraulic jacks. As the welded rail grows in length, its welded joints pass successively through each of these units, which thus work simultaneously with the welding and each other. Both output and quality have thus been appreciably improved, especially in the precision control of alignment. One plant can produce nearly 3 km. of welded rail a day, and this is loaded by one man on to flat wagons fitted with a special ramp.

Prefabricated Track

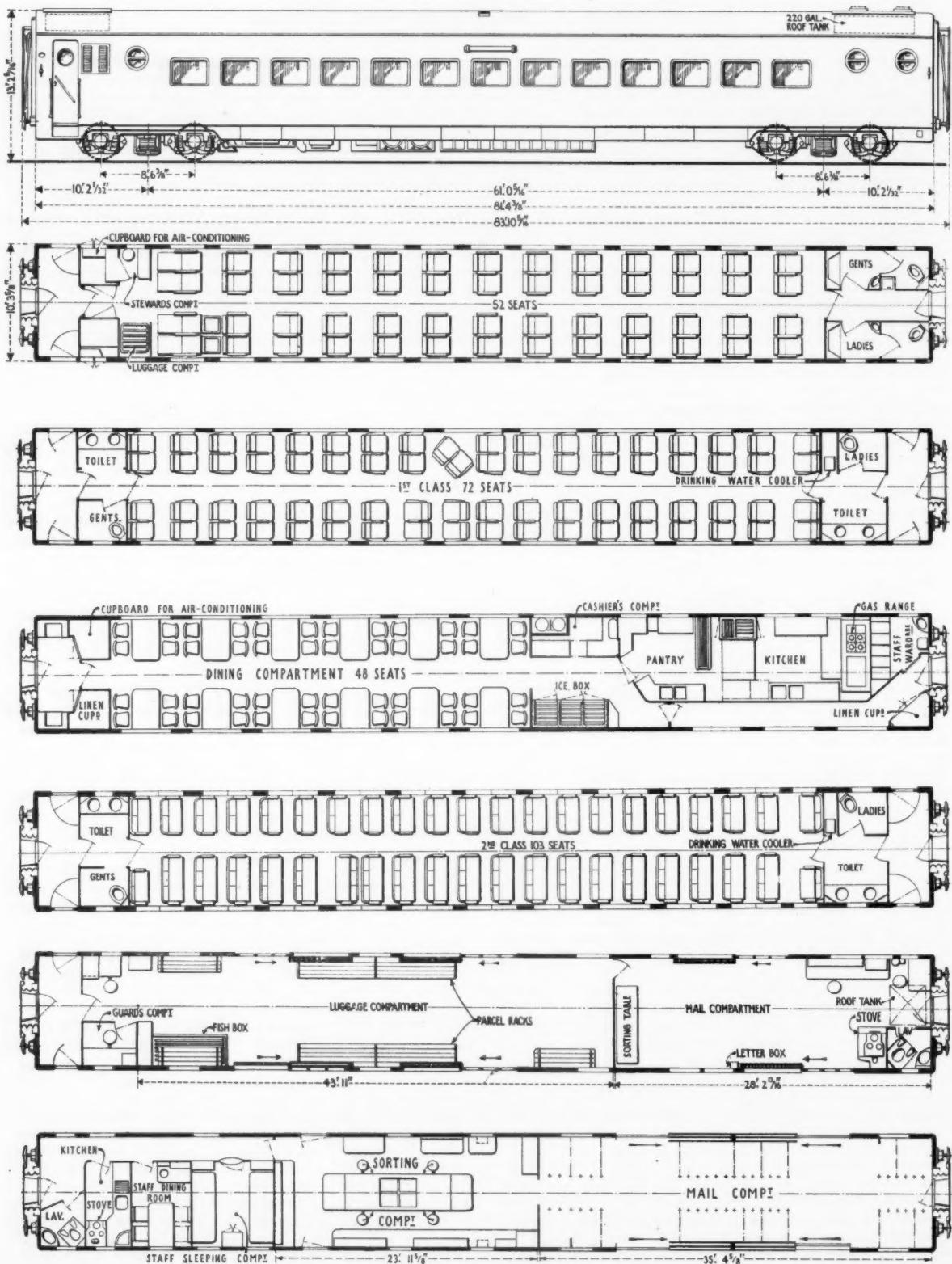
In some cases, however, the flexibility of aluminothermic welding of prefabricated track at site has its advantages. There is much to be said in favour of precision methods in well-equipped workshops in the fabrication of complete sections of track, and their mechanical handling both there and at site, a necessity with heavy concrete sleepers. There now seems to be a tendency towards workshop manufacture of 50 and 100-m. rails in France; they are subsequently welded by the aluminothermic method.

Economies Effected by Welding

It is too early to assess precisely the economies resulting from welded track, but the smallest calculated saving so far is about 30 per cent, and was secured on the Paris-Marseilles line near l'Etang de Berre. On the busy Amiens-le Bourget section one of the tracks was welded in 1949, and it is estimated that this has reduced the cost of maintenance by 78 per cent; in the approaches to large stations and other busy centres the figure is even higher. The improvement in the state of the road as a result of welding is generally recognised. What irregularities there may be in welded track are spread out over long distances and so show up slowly; they have little effect on the running. So their correction can be included in long-term programmes dictated by information obtained from a Mauzin inspection car, and maintenance work can be spread out in time and distance. Even in the case of welded tracks consisting of reconditioned old rails, economies work out at about 60 per cent, and therefore a future average of some 75 per cent seems reasonable.

At any rate, it is expected that the outlay on welding will be recoverable in a very few years. Incidentally, one of the most notable features of the combination of long welded rails, doubly-flexible fastenings, and concrete sleepers is its silence under traffic.

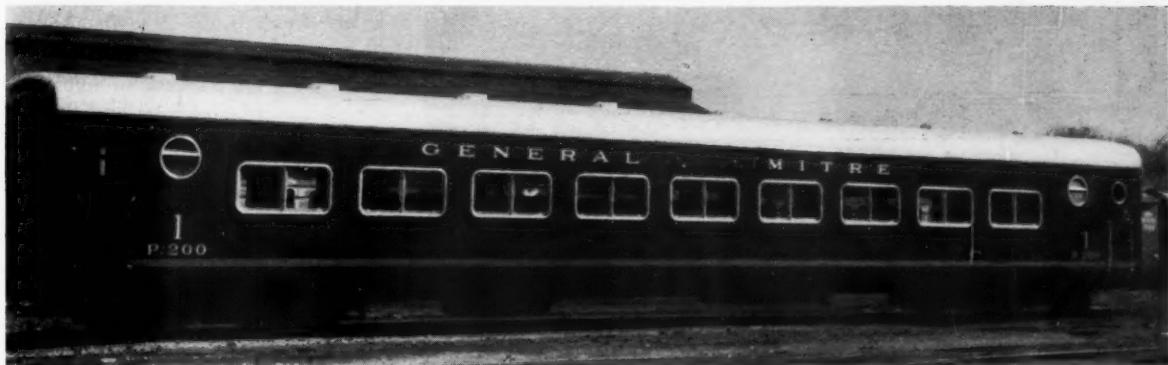
Rolling Stock for Argentine Railways



Leading dimensions and interior arrangement of the rolling stock. The underframe and bogie dimensions are basically similar on the different types of vehicles

Rolling Stock for Argentine Railways

Broad-gauge vestibule stock of all-steel construction



Argentine Railways first class carriage. The exterior appearance of all rolling stock is basically similar

IN 1952, Werkspoor N.V., Amsterdam, obtained an order for the supply of rolling stock to the Argentine Railways. The new stock is of all-steel construction and is required for operating on the broad-gauge General Mitre, General Roca, General San Martin, and Sarmiento lines. The company also received a contract for the supply of carriages for suburban traffic on the metre-gauge General Belgrano lines, and 90 diesel-electric locomotives. The metre-gauge rolling stock is still under construction.

Vehicles Sub-Contracted

The total order for the broad-gauge stock comprises 100 first-class carriages, 185 second-class carriages, 55 luggage vans, and 50 semi-Pullman carriages, with air-conditioning installation. Furthermore, contracts were received for 15 restaurant cars and ten postal vans; both these orders were partly subcontracted with Beijnes N.V. Beverwijk. The leading particulars of the broad-gauge stock are as follow:—

Length over buffers	...	...	83 ft. 10½ in.
Width body	...	...	81 ft. 4½ in.
Width "	"	"	10 ft. 3¾ in.
Height, rail to top of roof	...	...	13 ft. 2¼ in.
Distance between bogie centres	...	...	61 ft.
Bogie wheelbase	...	...	8 ft. 6¾ in.
Diameter of wheels	...	...	3 ft. 1½ in.
Tare weight (non-air-conditioned stock)	...	52 tons	
" (air-conditioned stock)	...	62 "	

The general design of the rolling stock was developed in close collaboration with the Technical Committee of the Argentine Railways. All carriages are mounted on two-axle bogies, and are designed to negotiate curves with a minimum radius of 290 ft. 3 in. The stock is equipped with a vacuum braking system, with two 24-in. vacuum cylinders, and two S.A.B. slack adjusters type DA2-450; an emergency valve is also fitted. The non-air-conditioned carriages have a heating generator suspended in one of the bogies supplying current for the heating elements in the side panels.

In general, carriages are of flush finish on the outside. The interior, which is also of flush finish, is composed

mainly of Formica and stainless-steel, which has the advantage of being easily kept clean. Both the underframe and body frame with sheeting, are electrically welded throughout, thus forming an integral load-carrying unit. This construction, in general use with Werkspoor since 1932, called for a thorough research in actual stress distribution. An original calculation method was developed and subsequently tested (before the advent of resistance strain gauges) the tests fully confirming the computations. In the present design, at the request of the railway authorities, emphasis was laid on robust rather than light-weight construction. Considerable attention was also given to the insulation. Light metal alloys are used extensively for window frames, louvres, luggage racks, electrical fittings and seat frames, anodised in natural colour.

First-Class Stock

The first-class stock comprises a large passenger compartment without partitions. The floors are rubber covered and the sides are finished in lacquered

plywood. The windows are of the lift-up type; the narrow windows are grouped in pairs in common frames having rounded angles. Securit windows are fitted. Louvres are also provided. The 36 two-passenger seats are of the revolving type with fixed back, and adjustable foot rest; the seat and back is upholstered with foam rubber mattresses and P.V.C., green imitation leather coverings.

Parcel racks are provided over the windows, running the full length of the passenger compartment, and are mounted on light metal brackets, to which nickel-plated copper wire netting is fitted. Electric heating elements are built into the side walls between the seats. Air extractors and electric fans are fitted in the ceilings. Lighting is by incandescent lamps mounted in fittings with Perspex globes made to accommodate three or four lamps. Door-controlled electric lighting is provided in the ceiling at the entrance doors. Current supply is by a generator combined with a 24 V., 2 by 225 Ah, Nife battery.

At each end of the passenger compartment toilet and lavatory compart-



Interior of the first class saloon showing the seating arrangements



Interior of the postal van showing the arrangement of the sorting department

ments are provided. The toilet is equipped with large wash basins of stainless steel with pedal-operated taps. Both the toilet and lavatory compartments are lined completely in stainless-steel. The electrical switchboard is adjacent to the lavatory, below which is a drinking water cooler, the compressor-unit for which is placed in the under-frame. Freon 12 is used as a cooling medium.

The corridor between the lavatory and toilet compartments connect the passengers' compartment with the vestibules. These latter may be shut off with a series of doors with a turning sector fitted into the bottoms of the doors, and so arranged that they completely shut off the entrance steps. Special rubber strip is provided to prevent the penetration of dust. When the doors are opened the sector turns away under the floor and exposes the treads.

Second-Class Carriages

The layout of the second-class carriages is largely identical to that of the first-class stock. Linoleum is used for floor covering, the side walls being lined with a synthetic resin product, Formica steel blue. The passengers' compartment is fitted with two-three seats with throw-over type backs, and provides accommodation for 103 persons. These seats are also upholstered with foam rubber mattresses with P.V.C. imitation leather covering of a grey shade.

The baggage vans are of two types, but basically similar in design, the only difference being that some are provided with postal compartments; both types are identical on the outside including the arrangement of doors, both having a platform at one end giving access to the interior. The luggage compartment contains the usual equipment, table, swivel chair, locker unit, and so on. A stainless-steel bin for fish transport is provided, together with a roller-shutter cabinet for storing valuable documents.

Three sets of sliding doors are pro-

vided on each side comprising one double door with three fixed windows, and one steel door with wire netting on the inside; this latter may be arranged to provide ventilation inside the van. Door controlled lights are arranged to facilitate loading and unloading. The floor of the luggage compartment is made of drop-pattern plates fastened to a wooden under-floor. The plate is continuous and is designed for ease of washing down with water. In both types of vans the side walls are of painted steel sheets.

The postal compartment at the end of the van which is separated from the luggage compartment, contains a sorting table, a locker unit, a lavatory compartment with shower and coal-fired stove; the floor of this compartment is covered with linoleum. In the luggage vans without the postal compartment, there is the possibility of providing a lavatory compartment later. As a precaution against theft, windows are fitted with protective bars at the top only, beneath the cantilever a number of fanlights are provided.

The postal vans are used exclusively for long-distance mail transport and contain sorting and deposit compartments besides a number of service rooms, a bedroom for four persons, dining compartment, kitchen, and so on. Two sets of steel doors identical in design to those on the luggage vans are provided; the floor is also similar. A feature is the provision of adjustable sliding nettings for the stacking of mail bags.

The sorting department has a large table with an exhaust fan fitted on its underside. A number of fixed and tip-up tables are also provided, together with illuminated locker units fitted to the side walls. Letter boxes for public use are also provided, together with a press-button call buzzer and indicator panel. The walls of the sorting compartment are of painted steel sheet, while the bedroom and dining compartments are finished in lacquered plywood.

The bedroom contains four tip-up beds with foam rubber mattresses with imitation leather covering. The dining compartment is fitted with an ice-box and cooled water drinking tap, and the kitchen is equipped with a coal-fired range with a water heating element, steel-lined storage cabinets and so on; the partitions are of stainless steel. The lavatory compartment has a closet and shower, and is lined with stainless steel.

Semi-Pullman Cars

The semi-Pullman cars comprise one large passenger compartment, the floors are rubber covered and the interior is panelled in lacquered walnut. Fixed double-glazed windows of Securit glass are fitted, on the insides of which are balanced, light metal louvres. Air-conditioning equipment was provided by J. Stone & Co. (Deptford) Ltd. Accommodation is provided for 52 passengers, the seats, supplied by Pel Limited, are of the revolving type with individual reclining backs and a slide-out foot rest. Foam rubber mattresses with Connolly leather covering are fitted.

Above the windows, and running the



Interior of the restaurant car showing the seating arrangements

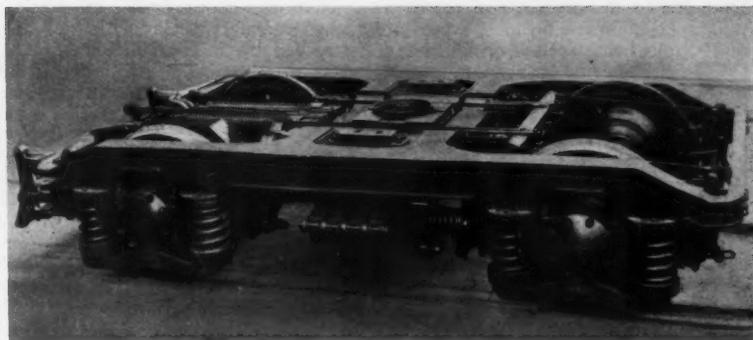
full length of passengers' compartment are closed-type luggage racks, the bottoms of which are lined with walnut veneer. Lighting is by 110 V. d.c. fluorescent Phillips lamps, the fittings being arranged continuously in the centre line of the ceiling. Emergency lights for night use are installed, together with reading lamps fitted in the luggage racks which also serve as service indicators by a red light built into the fitting.

Lighting in the lavatory and toilet compartments is by 110 V. incandescent lamps; a special mirror lighting is provided in the toilet compartments, together with step lights. A push-button service buzzer is also provided, together with lavatory and toilet engaged-disengaged indicators, fitted to the partitions. The walls of the lavatory are lined with stainless steel and those of the toilet with Formica. A servants' and a luggage compartment are provided. The air-conditioning installation, including the batteries, is housed in the underframe, a roof unit being provided in the vestibule roof.

Restaurant Cars

The restaurant car consists of one large compartment providing accommodation for 48 passengers, and a kitchen with pantry separated by a cashier's compartment. The floor is rubber covered, the side walls and partitions being of lacquered ash. The cars are equipped with air-conditioning by J. Stone & Co. (Deptford) Ltd. Fixed double-glaze windows and light metal louvres, are identical to those of the semi-Pullman cars. The dining tables are fixed and covered with Formica, while the chairs are mobile, and of wooden frames with leather covering.

The kitchen and pantry contain a Supergas cooking range, hot water boiler, and coffee machine, also a large ice-box, cupboards and sinks. The walls, ceiling, sinks, and cupboards are lined in stainless steel. The cashier's compartment has a counter, cabinets, and a room



Bogie for the non-air-conditioned stock showing the equalising levers below the axleboxes. Bogies of all stock are generally similar

for placing Butagas cylinders. Adjacent is an ice-box for drinks, lined with Formica; a light is provided, which switches on when the lid is opened. The dining saloon and cashier's compartments have fluorescent tubular lighting in the centre of the ceiling, while incandescent lamps are provided in the kitchen. The cars are equipped with a bell signalling system.

Underframe Construction

The underframes of all stocks are basically similar, and of robust construction, the main beams being of U-section running the full length of the underframe. The body bolsters are rigid box-girders made up of strip welded together. Between the bolsters are a number of crossbars, also of U-section, which support the floor. To stiffen the underframe a 1·25 mm. gauge corrugated floor, with lengthwise corrugation is welded to the underframe instead of using centre main girders.

Because of the design of the entrance steps and doors with turning sectors it was not possible to make a rigid connection between the sole-bars and headstock and a special design was evolved for transferring the buffing loads of up to

100 tons per buffer to the sole-bars. A number of tests were carried out with the use of dial indicators and strain gauges. A load of 100 tons was placed on diametrically opposed buffers, with the object of verifying whether the corrugated steel floor plates gave the underframe sufficient strength under diametrical loads.

The body frame is chiefly of rolled sections. The pillars are U-sections 88 mm. x 30 mm. x 5 mm. The roof consists of carlines and purlines, while heavy carlines made of steel plate with bottom flanges are welded into the body frame between two adjacent windows. The side and roof sheets are 2·5 mm. and 2 mm. gauge thickness respectively. The body ends are of heavy construction and two anti-telescoping beams are fitted adjacent to the end doors; lifting lugs are also provided. Skirts are fitted to the underframe of 2·5 mm. gauge sheet steel reinforced with stiffening ribs.

The entire frame is arc welded, and stress calculations were checked by comprehensive stress measurements carried out on a complete body frame of a semi-Pullman car. Stresses were measured in 176 places and were applied, (1) vertical



Interior of the semi-Pullman cars (left) showing the arrangement of seating, and (right) a seat in its extended position

load due to deadweight and passenger weight, (2) compression load, a pressure of 100 tons being exerted on all buffers, (3) vertical load, by suspending the carriages from the lifting brackets, (4) vertical load due to deadweight when supported only on two diametrically opposed points, so that the body is exposed to torsional stress.

Heat insulation is provided by Limpet asbestos, which is sprayed on the body panels, roof pillars, purlines, and carlines, and is applied 2 in. thick on the roofs of the air-conditioned stock and 1½ in. on all other carriages, and 1½ in. thick on the body panels on the air-

conditioned stock, and 1 in. thick on other carriages. Circulation of air is provided by grids in the body panels. Roof air-extractors are provided and holes are drilled in the purlines and cantrails to assist in the circulation of air.

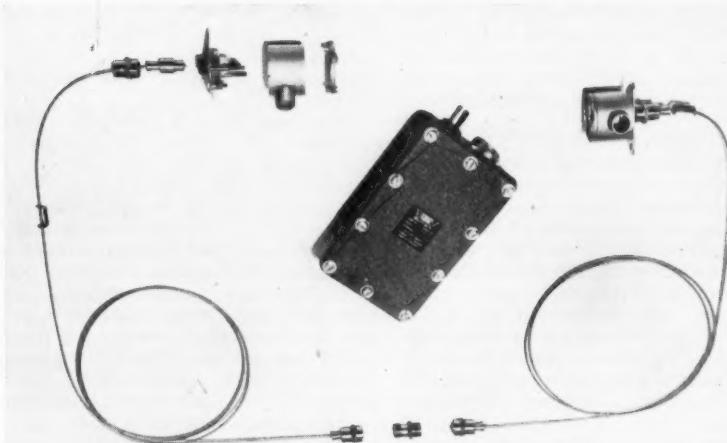
The bogies consist of a box-type welded frame carried on double or triple silicon-manganese springs nests, resting on an equalising lever suspended under the axleboxes. The axleboxes are self-aligning, and fitted with Skefko spherical roller bearings mounted on withdrawal sleeves. Rubber discs are fitted into the cast-steel cups to reduce vibration. The bogie bolster is a box-

type girder and rests on laminated springs supported by a cast-steel spring-plank with manganese-steel guide plates. The bogie bolster springs consist of three or four double-elliptic spring rests. A multiple type pivot is fitted with cast-iron side bearers.

Between the bogie frame and the spring plank are fitted simple adjustable friction-type shock absorbers to reduce lateral movement. The brake gear is fitted with turn-buckles for adjustment of clearance between the brake blocks and wheels; all bolts and bushes in the brakegear are of case-hardened steel.

Diesel Railcar Fire Detection Equipment

A system in which the response time is less than four seconds



Graviner Firewire series showing the relay box, detector element, and fittings

MUCH attention has been paid in recent years to the problems of fire detection equipment for diesel railcars, road transport vehicles, aircraft, and industrial undertakings. As a result of considerable research, the Graviner Manufacturing Co. Ltd., Poyle Mill Works, Colnbrook, Bucks, has developed a system which can be applied to each of the above applications, the technique is basically similar whether applied as a fire detector or when combined with fire extinguishing equipment.

Railcar Application

In railcar application with underfloor engines the equipment consists of a ductile, metal-enclosed, continuous detector, designed for the use in fire zones where the normal ambient temperatures do not exceed 110°C. The detector which responds rapidly to flame in excess of 250°C., is supplied in standard lengths of ten, 15 and 20 ft., and consists of a hermetically sealed cupro-nickel or steel capillary of approximately 0.095 in. o/d containing a wick impregnated with black powder and nitro-cellulose. One

end of the capillary terminates in a cap to which is screwed a cylinder housing a small piston.

The application of naked flame, to any point in the length of the capillary ignites the pyrotechnic cord, and the resultant pressure developed drives the piston to the opposite end of its stroke where it uncovers pressure relief ports. Piston movement is transmitted to an attached switch carrying a Tufnol plunger, which in turn closes a pair of gold-silver-platinum contacts. These contacts are wired internally to a waterproofed terminal block integral with the switch body. The contacts will pass 5 amps at 24 V. indefinitely.

Fire alone, can effect closure of the contacts and consequent illumination of a warning light or automatic firing of the Graviner extinguishers, a system which eliminates false warnings. Severing or flattening of the capillary at any point more than 12 in. from the switch body, a circumstance likely to occur during major mechanical damage which may precede engine fire, does not render the device immediately inoperative.

The switch body is designed for mounting on a bulkhead, and the capillary attached to it should be securely clipped through areas where flame is most likely to be met. The switch is of spring-leaf contact design, and provides a spring-loaded push-button for testing the electrical circuit to a warning light or for manual operation of extinguishers.

Development

The detector has, it is stated, proved its value over a number of years and is at present fitted to many railcars, including those operated by The Great Northern Railway Board, Ulster Transport Authority, New Zealand Government Railways, Nyasaland Railways and others.

The latest development by the Company and now going into quantity production, is the Series 3 Graviner Firewire, a robust continuous type of resetting fire and overheat detector, which is capable of innumerable repeat operations. It can be made up to any length in multiples of 5 ft. or 10 ft. elements and can withstand continuous soaking in high temperatures without detriment.

It can be bent, coiled, or even hammered flat and still operate, and has been designed to function on either 115, or 26 V. a.c. supply.

The detector requires no ordinary electrical wiring in the fire zone, and when rigged in a single ring circuit, even complete severing of the element will not render it any less sensitive to flame. The accompanying illustration shows a typical requirement for a complete installation, the weight of which, including 30 ft. of detector element, would be under three pounds.

AMERICAN CAR & FOUNDRY COMPANY CHANGE OF NAME.—The corporate name of the American Car & Foundry Company has been changed to A.C.F. Industries Incorporated to reflect the diversification of products and services of the company.

Royal Journeys in Ceylon

*Diesel and steam haulage for train
of specially reconditioned vehicles*



Royal train hauled by diesel-electric locomotives built by Brush-Bagnall Traction Limited, used on the sections laid with heavier track

DURING their recent visit to Ceylon, H.M. the Queen and H.R.H. the Duke of Edinburgh travelled by the Ceylon Government Railway on three occasions, covering a distance of over 300 miles. The Royal train consisted of 10 coaches. No new coaches were built, but existing saloons and coaches were altered, reconditioned, and decorated. The exterior of the coaches

was painted maroon, the standard colour for C.G.R. coaching stock.

The Queen and the Duke were provided with two saloons. One contained two well-appointed bedrooms and a sitting room for the lady-in-waiting, and the other a sitting room and dining room with a kitchenette attached. The interior of the sitting and dining rooms was lined with silver-coated fabric bear-

ing a crown design. The saloons were air conditioned with two one-h.p. Mitchell air conditioning units. The sitting room was furnished with a drawing room suite manufactured in the Ceylon Government Railway workshops and upholstered with material to match the lining of the interior of the coach.

The whole saloon was soundproof and fitted with splinter-proof glass windows. Adjoining these saloons was a coach furnished with comfortable settees and chairs for the use of the members of the Royal household.

Wireless and Telephone Communication

Wireless equipment was fitted in the brake vans, so that it was possible to communicate with the Queen's House and principal police stations and also the pilot train which ran ahead. Telephone communication was also available between the engine and brake vans of the Royal train, which was fully vestibuled.

The Prime Minister, Sir John Kotalawala, and the Minister in attendance used an observation saloon. The others who travelled in the train were the General Manager of the railway, Mr. M. Kanagasabay, with his principal assistants, representatives of the foreign and local Press and the police.

The first journey, from Colombo Fort to Polonnaruwa, 161 miles, was on April 14. The entrance to Colombo Fort Station was decorated and a

(Continued on page 694)



(Left) Two Bagnall 4-8-0 locomotives hauling the train over light track ; (right) interior of Royal saloon, showing furniture made in the Ceylon Government Railway workshops and fabrics used in the décor



Rebuilding Tangiwai Bridge, N.Z.G.R.

The 200-ft. structure washed away on Christmas Eve was replaced by a temporary bridge in six days

ON Christmas Eve, 1953, the 200-ft. bridge carrying the Wellington-Auckland main line of the New Zealand Government Railways over the Wanganui River at Tangiwai, was destroyed by volcanic eruption in the nearby mountains causing a sudden and abnormal flood in the river. In under a week a temporary bridge was built.

Before it was almost entirely swept away, the bridge consisted of—from north to south—one 22-ft., two 44-ft., and four 22-ft. plate-girder spans supported by concrete abutments (Nos. 1 and 8) and piers (Nos. 2 to 7). Piers 3, 4 and 5 were washed away and the top 6 ft. of Pier 2 was broken off.

Spans 1 to 5 were left lying either in the river bed—some distance away in one or two instances—or on the bank.

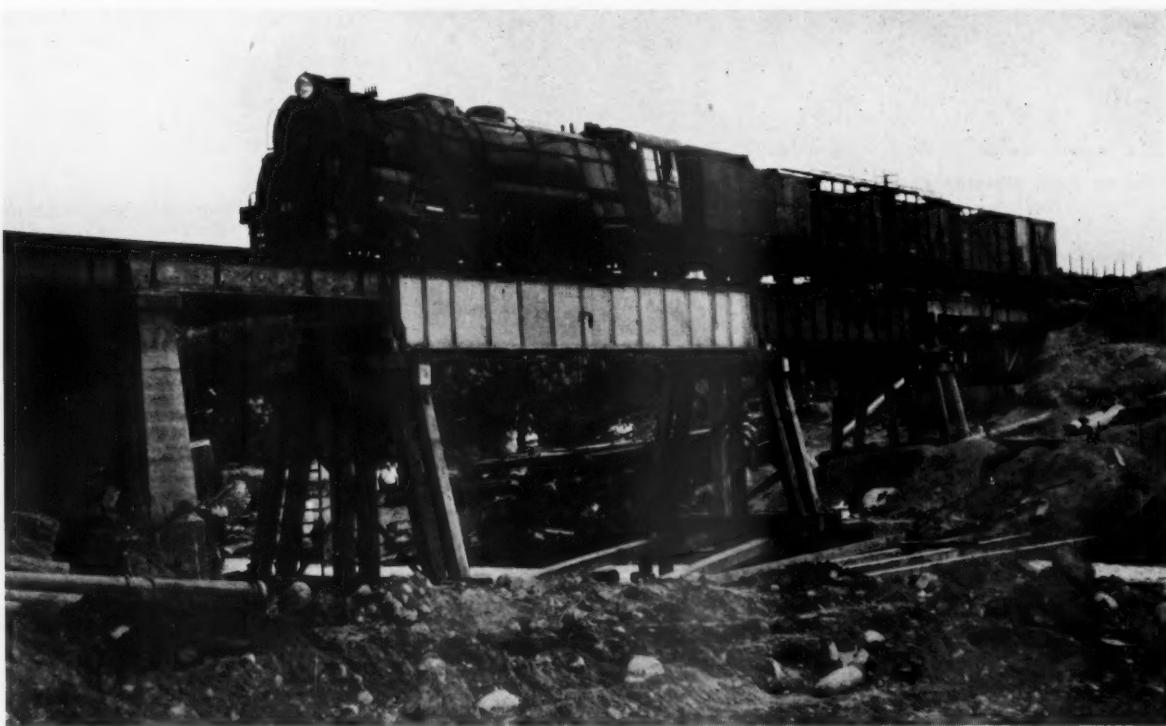
The two 44-ft. spans were seriously damaged and unfit for further use, but two of the 22-ft. spans were recovered undamaged and serviceable; the third 22-ft. span has or had not been found. Spans 6 and 7 and their supporting piers 6 and 7, remained intact.

Erection of Temporary Bridge

The two 22-ft. spans were re-erected as spans 1 and 5 in the temporary bridge, and old spans 2, 3 and 4 were replaced by one 20-ft. timber and one 40-ft. and one 50-ft. plate-girder spans.

The top 6-ft. of Pier 2 was restored as a timber trestle, and new Piers 3, 4 and 5 were built as single-bent timber trestles founded upon piles. Large boulders in the river bed prevented the piles from being driven in correct alignment; they were, therefore, cut off just above bed level and capped to carry the trestles.

Apart from track-laying, the erection of the 50-ft. span was the last operation, and the new bridge was completed and the first train passed over it on December 31. The Civil Engineering Branch of the New Zealand Government Railways was wholly responsible for the work.



Test train crossing the temporary bridge built to replace the wrecked structure, viewed from the south-east

Royal Journeys in Ceylon

(Concluded from page 693)

pandal erected, through which the Royal party entered.

Steam Haulage over Light Track

The train, which was hauled by two Brush Bagnall diesel-electric locomotives, left at 7 a.m. amidst the applause of thousands of railway employees who had come to the station to see the Royal couple.

The first stop was at Maho Junction, where the locomotives were changed, as

the rest of the journey was over track laid with light section rails. Two Bagnall 4-8-0 steam locomotives hauled the train from Maho to destination.

The Royal train arrived at Polonnaruwa on time, the royal coach halting opposite a specially erected platform from which the Queen and the Duke walked to their motorcar under a canopy of flowers.

The second journey was from Matale to Nanu-oya, 79 miles. On this journey the Royal couple travelled most of the time in the observation saloon viewing mountain scenery and waving to crowds

who had gathered on embankments and on station platforms.

The third and last journey was from Kandy to Colombo on April 20, a distance of 74 miles. Again the Queen and the Duke used the observation saloon. Despite a drizzle, huge crowds much larger than on earlier occasions had gathered all along the route to see the Queen pass. The train arrived at Colombo Fort station as scheduled at 5.55 p.m. Mr. Kanagasabay received the Royal visitors and conducted them on *parvada* (traditional white cotton carpets) to their car.

RAILWAY NEWS SECTION

PERSONAL

The British Transport Commission announce that Mr. John Ryan, C.B.E., M.C., and General Sir Daril Watson, G.C.B., C.B.E., M.C., have been appointed as additional Members of the Board of Management of the Commission's Docks & Inland Waterways.

Mr. C. G. Bunker, who, as recorded in our May 21 issue, has been appointed Freight & Passenger Agent for the Canadian Pacific Railway in Dundee, with effect from May 1, succeeds Mr. J. Dunne, who has retired. Mr. Bunker joined the C.P.R. in 1926, and, before the war, served in the Passenger Department. When he

served with the R.F.C. and R.A.F. until 1919. Before demobilisation he was in charge of the Movements Branch of the R.A.F. at the Air Ministry. In 1919 he returned to the Office of the Superintendent of the Line, on the outdoor staff. In 1920 Mr. Ball was appointed Outdoor Assistant to the Outdoor Superintendent, North Staffordshire Railway, at Stoke-on-Trent, and in 1924 became District Controller there for the L.M.S.R. In 1929 he was made District Controller, Birmingham (New Street), and, in the next year, Divisional Freight Train Controller, Western Division, Crewe. In 1936 he was appointed Assistant Divisional Superintendent (Traffic), Crewe. In October, 1939, he was detached to join Railway

ager's office, Manchester. In 1928 Mr. Polding transferred to the Passenger Commercial Superintendent's office at Derby, and, in 1934, went to the office of the Chief Commercial Manager at Euston as Chief Excursion Clerk. From 1940 to 1945 he was Assistant (Passenger Services) in the office of the Chief Operating Manager, Euston, and in 1946 became Assistant District Passenger Manager at Euston. Mr. Polding went to Leeds in 1947 as District Passenger Superintendent, the position he now leaves for his present appointment. He is a member of Manchester Chamber of Commerce, a member (representing Railways) of the North West Transport Users Consultative Committee, a member of the Institute of



Mr. C. G. Bunker

Appointed Freight & Passenger Agent,
Dundee, C.P.R.



Mr. L. P. Ball

Divisional Operating Superintendent,
Derby, L.M. Region, 1949-54



Mr. T. W. Polding

Appointed District Passenger Superintendent,
Manchester, L.M. Region

rejoined the company after military service he transferred to the Freight Department, first in the London City Office and latterly at the European headquarters in Trafalgar Square. Mr. Bunker has travelled extensively in Canada and on the Continent before and since the war, his most recent visit was last year when he made a coast-to-coast tour. He is no stranger to Dundee as he was acting agent there for the last three months of 1953.

Mr. Kenneth Kasschau, Director of the Research & Medicine Division of the Atomic Energy Commission Oak Ridge Operation, U.S.A., has been appointed Manager of Engineering and will take charge of a new Atomic Energy Projects Department being set up by the American Locomotive Company.

Mr. L. P. Ball, Divisional Operating Superintendent, Derby, London Midland Region, British Railways, is to retire on July 3 after 45 years service. Mr. Ball was educated at Colet Court, St. Paul's, and Lycée Corneille, Rouen, and joined the Great Western Railway in 1909. In 1913 he obtained station experience in the London and Exeter Divisions, and in the next year joined the Army. He saw service at Gallipoli, and afterwards

Executive Committee headquarters as Assistant to Mr. (now Sir) V. M. Barrington-Ward, who was then Chairman of the Operating Committee. He was appointed Assistant (Freight Services), Chief Operating Manager's Office, L.M.S.R., in October, 1944, and became Divisional Operating Superintendent at Derby in 1949.

Mr. B. G. Dowrick, District Engineer's Department, Auckland, New Zealand Railways, has been elected an Associate Member of the Institution of Civil Engineers.

We regret to record the death, at the age of 67, of Colonel Cyril Murton Croft, a past president of the Institution of Gas Engineers and of the International Gas Union. Colonel Croft was a member of the British Railways Arbitration Tribunal, 1949.

Mr. T. W. Polding, District Passenger Superintendent, Leeds, North Eastern Region, British Railways, who, as recorded in our June 4 issue, has been appointed District Passenger Superintendent, Manchester, London Midland Region, joined the former Lancashire & Yorkshire Railway at Manchester in 1912 and, after serving with the Royal Field Artillery in France in the 1914-18 war, returned to the Chief Commercial Man-

Transport, a member of Rotary, and serves on joint committees with the Ribble Motor Services Ltd., North Western Road Car Co. Ltd., Lancashire United Transport and Todmorden Joint Omnibus Committee.

The following is extracted from the Supplement dated June 4, 1954, to *The London Gazette* of June 1, 1954:

The Queen has been graciously pleased to confer the award of the Army Emergency Reserve Decoration upon the following officers:

Corps of Royal Engineers

Maj. T. V. Nicholson, O.B.E. (94841)
Maj. (Hon. Lt-Col.) E. L. Trifitt, B.A.,
M.Inst.C.E. (50427)
Capt. (Hon. Maj.) H. G. Crawford, M.C.
(87065)

Capt. (Hon. Maj.) S. M. Taylor (41089)
Capt. H. C. L. Trickett (85756)

The award of the 1st Clasp to the Army Emergency Reserve Decoration is announced in the same Supplement to Lt.-Col. Trifitt, Maj. Nicholson, Maj. Taylor and Capt. Trickett.

Mr. J. S. Makin has been appointed Branch Manager of the Manchester office of British Insulated Callender's Cables Limited.



Mr. R. O. Banister

Divisional Operating Superintendent (Central Division), Manchester, L.M. Region, 1944-54

Mr. Richard Owen Banister, Divisional Operating Superintendent (Central Division), Manchester, London Midland Region, British Railways, who, as recorded in our May 28 issue, retired at the end of last month, spent most of his 47 years of railway service in Lancashire and Cheshire, where he has controlled rail traffic movements in one of the most densely-populated areas in the world. Mr. Banister, who was born on October 8, 1892, at Leyland, Lancashire, was educated at Baishaws Grammar School, and entered the service of the London & North Western Railway in July, 1907, as a clerk in the Stationmaster's office at Preston. From 1914-19 he served in the 17th Battn. King's Liverpool Regiment (Lord Derby's Pals), subsequently returning to the railway service. In June, 1923, he was appointed Yardmaster at Warrington, and, in 1926, he became Assistant Yardmaster at Crewe. Three years later, he became a Head Office Inspector in the Divisional Operating Superintendent's Office at Crewe, and was appointed Controller of Freight Services in January, 1931. He left the position of Assistant District Controller at Crewe (Basford Hall) in 1932 to become Stationmaster at Blackpool (Central), and, in 1934, moved to a similar position at Preston. From 1936-38, Mr. Banister was Divisional Controller (Passenger Services) at Manchester and, in October of that year, he became Assistant (Passenger Services) at Euston Headquarters. From 1941-43 he was seconded as a general assistant to the Divisional Operating Superintendent at Crewe dealing with the movement of troops and war materials. After a short period as the District Goods & Passenger Manager at Northampton, he was made Divisional Operating Superintendent in Manchester on November 1, 1944, from which position he now retires. Mr. Banister received the O.B.E. in 1952. He took great interest in railway ambulance work, and at the time of his retirement was President of the railway branch of the British Legion in Manchester.

Mr. M. E. Hayes has been appointed Director & General Manager of Le Carbone Limited, Portslade, Sussex. Mr. B. R. Padmore has relinquished the

Managership of the Battery Department to take up other duties in Canada on behalf of the parent company.

TRANSPORT USERS CONSULTATIVE COMMITTEE, SCOTLAND

The following have been appointed members of the Committee for Scotland until January 31, 1957:—

Chairman: Sir John Erskine, C.B.E., D.L., J.P., F.R.S.E.

Members: (Representing Agriculture): Mr. J. C. Campbell, Mr. J. Marshall. (Representing Commerce & Industry): Messrs. W. Mackenzie, W. G. N. Walker, H. Adamson, J. Aitchison. (Representing Shipping): Mr. J. Urquhart. (Representing Labour): Mr. T. B. Meikle, O.B.E., Mr. F. Donachy. (Representing Local Authorities): Councillor R. McLaughlin, Treasurer G. R. McIntosh, C.B.E., Messrs. R. Fullarton, J.P., A. Anderson, J.P., G. H. Mogerley, J.P., G. Fraser, J.P. (Representing the British Transport Commission): Captain Sir Ian Bolton, Bt., O.B.E., Messrs. J. B. Hastie, O.B.E., T. F. Cameron, J. Amos, O.B.E. (Additional Appointments): Mrs. N. Kennedy, Mrs. P. M. B. Mudie.

One further member representing commerce and industry has yet to be appointed.

Mr. V. C. H. Creer, a Director of the British Thomson-Houston Co. Ltd., has been elected Chairman of the Council of the Electric Lamp Manufacturers' Association for the year 1954-55, with effect from June 1.

The following staff changes are announced by the Scottish Region, British Railways:—

Mr. K. R. M. Cameron, District Motive Power Superintendent, Kentish Town, London, to be District Motive Power Superintendent, Edinburgh.

Mr. G. S. Forsyth, Head of Commercial and General Section, Regional Staff Office, to be Assistant (Wages Staff) to Regional Staff Officer, Scottish Region.

Mr. A. H. McKay, Head of Locomotive and Traffic Section, Regional Staff Office, to be Assistant (Salaried Staff) to Regional Staff Officer, Scottish Region.

TRANSPORT USERS CONSULTATIVE COMMITTEE, WEST MIDLAND AREA

The following have been appointed members of the Committee for the West Midland Area until March 31, 1957:—

Chairman: Major C. R. Dibben, O.B.E.

Members: (Representing Agriculture): Mr. T. S. Inett, Mr. H. F. Parker. (Representing Commerce & Industry): Messrs. F. D. Scott-Walker, M.C., R. H. Smith, A. H. Johnson, H. W. Davies, E. J. H. Ravenhill. (Representing Labour): Mr. A. J. Pratt, J.P., Mr. L. V. Pike. (Representing Local Authorities): Alderman A. M. Silcox, Councillor G. H. Aldridge, Alderman J. Whiston, O.B.E. (Representing the British Transport Commission): Sir H. Reginald Kerr, K.B.E., C.B., M.C., M.Inst.T., Mr. R. P. Davis, A.M.Inst.T.

Secretary: Mr. N. W. Platt.

The office of the committee is at 1-9 Colmore Row, Birmingham, 3.

One member representing industry & commerce, one member representing shipping, and two members representing local authorities have yet to be appointed.

Mr. W. H. Nicholson, who, as recorded in our June 11 issue, has been appointed District Motive Power Superintendent, Nine Elms District, Southern Region, British Railways, entered the service of the L.S.W.R. in 1910 and served as an apprentice fitter. He served with the Royal Engineers (Signal Service) in the war of 1914-18.



Mr. W. H. Nicholson

Appointed District Motive Power Superintendent, Nine Elms District, Southern Region

Returning to the Fitting Shop, Eastleigh Works, in 1919, he held a number of positions; he was appointed Running Shed Superintendent, Eastleigh, in 1945, and Assistant Western Divisional Superintendent of Motive Power, Woking, in 1947. Mr. Nicholson was transferred to the office of the Motive Power Superintendent in 1949 as Acting Technical Assistant. He was awarded the B.E.M. in the 1947 Honours List, and was appointed District Motive Power Superintendent, Eastleigh, Southern Region, in 1950.

The following staff changes are announced by the Western Region, British Railways:—

Mr. H. E. A. White, District Locomotive Superintendent, Bristol, to be Motive Power Superintendent, Swindon.

Mr. A. E. Flaxman, District Commercial Superintendent, Worcester, to be Assistant to Commercial Superintendent (Terminals & Cartage).

Mr. A. W. McMurdo, Assistant District Engineer, Paddington, to be District Engineer, Shrewsbury.

Mr. H. Hays Jones, Secretary of the Charges Committee of the British Transport Commission, retired on April 30 after 46 years service with the Railway Clearing House, and latterly, with the British Transport Commission. He was appointed Secretary of the Charges Committee in 1948.

The following appointments have been announced by Montreal Locomotive Works Limited:—

Mr. William G. Miller is appointed as President and Mr. Stephen G. Harwood as Vice-President. Mr. P. T. Egbert, formerly Chairman & President, continues as Chairman. Mr. Miller has been Executive Vice-President since January, 1952, and Mr. Harwood has been Sales Manager since December, 1950. The appointment of Mr. Miller, a Canadian resident, as President, is said to be in line with the policy of making the company an all-Canadian operation. The election of four directors, all Canadians, was recorded in our issue of June 4.

Mr. Lewis Burn, M. I. Mech.E., has joined the staff of Armstrong Whitworth (Metal Industries), Limited, as engineer consultant.

Queen's Birthday Honours List

The following is a further selection of honours of transport and industrial interest from the Queen's Birthday Honours List:-

Privy Councillor

Mr. Arthur Deakin, C.H., C.B.E., J.P. For services to the Trade Union Movement.

C.B.

Mr. Terence Frederick Bird, Under-Secretary, Ministry of Transport & Civil Aviation.

C.B.E.

Mr. George Alexander Fitch, Assistant Secretary, Exports Credits Guarantee Department.

Mr. Hugh Geoffrey Herrington, Managing Director, High Duty Alloys Limited, Slough, Buckinghamshire.

Mr. Stanley William Nelson, Licensing Authority, Western Traffic Area, and Regional Transport Commissioner, Western Region, Ministry of Transport & Civil Aviation.

Mr. John Frederick (Jack) Tanner, lately President, Amalgamated Engineering Union.

Mr. Ivan Bernard Trevor, M.C., General Manager, Kowloon-Canton Railway (British Section).

O.B.E.

Mr. Stuart Ainsworth, Manager of the Guaqui-La Paz Railway, La Paz.

Mr. Henry Lower Carter, M.B.E., Accountant for North America of Thomas Cook & Son, Incorporated (New York).

Mr. Oliver George Holt Ormeroyd, Superintendent, Watch & Ward, East Bengal Railway.

Mr. Herbert Henry Phillips. For services as Chief Commercial Officer (Railways), British Transport Commission.

Mr. Alastair Malcolm Smith, M.B.E., Assistant Superintendent of Ports & Lights and Port Manager, Mombasa, East African Railways & Harbours Administration.

M.B.E.

Mr. Thomas Smith Arnott, Station Master, Edinburgh (Waverley), Scottish Region, British Railways.

Mr. William Charles Beck, Building Superintendent, East African Railways & Harbours Administration.

Mr. Eugene Cross, M.M., J.P., Personnel Manager, Richard Thomas & Baldwins Limited, Ebbw Vale.

Mr. Leon Joseph Elias Hennequin, Assistant Accountant, Railway Department, Mauritius.

Mr. Douglas Scruton, Chief Registrar, Ministry of Transport & Civil Aviation.

Mr. Arthur Ian Forbes Simpson, Senior Engineer, The General Electric Co. Ltd., Allesley, Coventry.

Mr. Basil Edwin Sutton, Chief Engineer, Thames Valley Traction Co. Ltd.

B.E.M. (Civil Division)

Mr. Leonard Beal, Boatswain, ss. Brighton, British Transport Commission.

Mr. John Wilcoxon Hallows, Signalman, Dunford, Eastern Region, British Railways.

Mr. Ronald Thomas Hodder, Plater, Marine Department, Southampton, British Railways.

Mr. Charles Williams, Foreman, Gloucester Railway Carriage & Wagon Co. Ltd., Gloucester.

Institution of Railway Signal Engineers Visit to Holland

Visits to Netherlands Railways signal installations

The summer meeting of the Institution of Railway Signal Engineers was held at Utrecht from May 28 to 30 by invitation of the President of the Netherlands Railways, Mr. F. Q. den Hollander. The party consisted of about 150 members and ladies and was led by the President, Mr. J. Holden Fraser, Chief Officer, Engineering (Signal & Telecommunications), British Transport Commission, supported by Messrs. E. G. Brentnall and J. C. Kubale, Vice Presidents, Messrs. F. L. Castle, R. Dell, F. Horler, S. Williams, T. Austin and T. S. Lascelles, Past Presidents; a number of Members of Council; Mr. G. J. Dickin, Hon. General Secretary, Mr. B. Reynolds, Hon. Treasurer, and Mr. P. Guyatt, Hon. Secretary, General Purposes Committee.

On arrival at the Hook of Holland the party was welcomed on Mr. den Hollander's behalf by Mr. H. A. E. de Vos to Nederveen Cappel, Chief Signal Engineer, with his Assistant Signal Engineer (New Works), Mr. V. J. M. de Blieck, and after being entertained to breakfast went to Utrecht by special train, where the ladies were taken on visits to local places of interest.

Power Interlocking at Eindhoven

The members proceeded by special train to Eindhoven to inspect the extensive engineering works in connection with the elimination of the many level crossings which had become such an obstacle to working and the new "NX" type electric power interlocking which, when all the tracks are completed, will actuate 96 sets of points and 72 signals, and controls some 430 train movements, passenger and goods, daily.

All sections of the signalbox were examined, with certain items of equipment laid out for inspection. A lecture was given by an Assistant Engineer, Mr. H. Wiemans, covering the system of signal aspects being applied in all new work (see *The Railway Gazette*, March 7, 1952, page 265) and the leading technical features of the apparatus. Mr. de Vos explained that a programme was in hand to apply automatic signalling with track circuit control and colour-light signals to all the electrified lines, to be completed by 1963. Meanwhile most of the level crossings were to be provided with automatic "half-gate" barriers and flashing warning lights. The "NX" interlocking system would be applied to the larger stations. Installations were in operation at s'Hertogenbosch, Blauwkapel, and Eindhoven, and one was under construction for Arnhem. (The method of operation is substantially the same as that applying in the Stratford area of the Eastern Region but some of the engineering details vary). A great improvement in traffic working has resulted at Eindhoven from the adoption of the system.

Signal Department Instructional Car

On May 29, members travelled by bus to Lunetten Station, where they inspected the Signal Department instructional car, where various items of equipment were on view. The excellence of the instructional drawings was much admired. At the station itself was seen an electric power interlocking installation of older

pattern, much used in Holland and other parts of the Continent, having an individual lever frame working in conjunction with the a.c. magneto-generator block apparatus standard on the Netherlands Railways and operating all semaphore signals and points by motor machines. The points are everywhere trailable. These frames are still being constructed and give excellent service.

From there they visited level crossings protected by automatic half-gate barriers and flashing lights and bells and the equipment was seen functioning as trains approached. There are over 3,300 level crossings on public roads alone, with rather more over private ways of the occupation type.

The new "NX" power interlocking at Blauwkapel was inspected, which has replaced seven signalboxes and controls a group of junctions at the approach to Utrecht. Between Blauwkapel and Utrecht Central Station the double line is worked as two single lines. Provision has been made for controlling the signalbox remotely from Utrecht when an "NX" interlocking is installed there. At this point members were shown power-operated crossing barriers. The new three-speed system of aspects is in use throughout the area controlled by the new box.

In the evening an informal dinner was held in Utrecht. Mr. Fraser presided, and the guests were Mr. de Vos, Mr. de Blieck and several of their colleagues, with Mr. J. H. Verstegen, formerly Chief Signal Engineer, and the guides to the party.

After proposing the toasts of the Sovereigns of the Netherlands and the United Kingdom, Mr. Fraser emphasised the very great gratitude of the visitors for the kindness they had received. They had been much impressed, he said, by the excellence of the engineering work they had seen.

Mr. Fraser then presented to Mr. de Vos as a mark of appreciation an illuminated address, designed and executed by Mr. F. Horler. Mr. de Vos had been admirably supported in what he had done by the various engineers, technical assistants, and lady guides with them that evening, and to each of them Mr. Fraser made a separate presentation.

British Aid to Dutch Railways

Mr. de Vos replied that the gifts would ever be a reminder of the enjoyable hours the visit had brought with it. The previous official visit of the Institution was in 1929 and he hoped they would not wait 25 years before making the next. He spoke warmly of all the help he had received during the difficult days following the liberation, from British signal engineers and the Royal Engineers. He proposed success to the Institution and hoped it would develop closer contact with his department.

After Mr. Fraser had responded, Mr. Brentnall expressed the thanks of the participants to the General Purposes Committee and to Mr. Guyatt, besides the officers of the Institution for the excellent work done in organising the meeting from their side, to which Mr. Guyatt responded.

Sunday, May 30, was occupied with an all-day tour as guests of the Netherlands Railways, by coach to Maarsen and thence by boat on the Vecht river to Vree-

land proceeding again by road through Hemstede to Haarlem, where lunch was served. The party continued thence through Noordwijk and The Hague to Delft for tea.

Welcome by Mr. F. Q. den Hollander

In the evening they were entertained to dinner by special permission of the Mayor of Delft, in the grand hall of the Prinsenhof, once the residence of William of Orange. Mr. den Hollander presided. After proposing the combined Loyal Toasts, he expressed the great pleasure felt by himself and his Management at being able to welcome the visitors. They were proud, he added, that they had selected the Netherlands for their visit. Their countries had much in common. He himself was a mechanical engineer but appreciated the importance of signalling from both the safety and operational points of view. Signalling would enable the railways to play their part in the future development of transport and meet increasing demands. He hoped the Institution would come many times to the Netherlands and not again let so many years elapse between the visits. He wished it every success in its work.

Mr. Fraser said in reply that it was hard adequately to express their thanks for the hospitality extended to them. The Council had decided, as a gesture of appreciation, to ask Mr. den Hollander to accept honorary membership of the Institution, to which he had consented. Mr. Fraser handed to him the membership certificate. He also expressed thanks to those who had made the arrangements, and he made presentations to Mr. J. Wolterbeek, Chief Passenger Manager, and two colleagues as a mark of the Council's appreciation. Mr. den Hollander in reply expressed his pride in being elected an Honorary Member.

The party was then conveyed by special train from Delft to the Hook of Holland and reached London on May 31.

PIG IRON AND STEEL PRODUCTION IN MAY.—Steel production in May averaged 374,500 tons a week. This figure is a new record, exceeding the previous highest output of 368,300 tons a week which was achieved in April of this year. The corresponding figures for May, 1953, was 350,700 tons a week. The production of pig iron averaged 231,400 tons a week, compared with 232,100 tons in April. The figure for steel is equal to an annual rate of 19,476,000 tons.

Electric Services Between Manchester, Glossop and Penistone

Inauguration of another stage in Manchester-Wath-Sheffield electrification scheme

Since Monday last, June 14, when the summer timetable came into force, local services from Manchester London Road to Glossop and Hadfield and main line passenger and freight services between Manchester and Penistone have been worked electrically. This represents the completion of the second stage of the 1,500 V a.c. Manchester-Wath-Sheffield electrification scheme; the first stage was completed in February, 1952, when the mineral traffic between Wath, Penistone and Dunford Bridge (east of Woodhead Tunnel) began to be hauled by electric locomotives. The operating aspects of the electrification were described in detail in our July 31 and August 7, 1953, issues. The suburban section newly-electrified includes the spur to Glossop Central which forms a triangular junction with the main line between Dinting and Hadfield, the spurs from Guide Bridge towards Stalybridge and to Ashton Moss, and from Fairfield to Reddish Depot.

Multiple-Unit Stock

The General Electric Co. Ltd. supplied the complete electrical equipment for the suburban stock, which consists of eight three-car multiple-unit trains, each comprising motor coach, trailer and driving trailer, with first and third class seating accommodation for 174 passengers. The Metropolitan-Cammell Carriage & Wagon Co. Ltd. built the motor coaches and trailers, and the Birmingham Railway Carriage & Wagon Co. Ltd. the driving trailers.

The local service has been considerably augmented. At peak hours two units, making a total of six coaches, operate. The number of trains on weekdays from Glossop to Manchester has been increased from 17 (18 on Saturdays) steam trains to 31 electric trains and from Hadfield from 10 (13 on Saturdays) to 23. A corresponding improvement has been made from Manchester London Road. On Sundays the Manchester-Glossop service is 17 trains each way, compared with seven before; two additional electric trains run to and from Hadfield. The journey time between Glossop or Hadfield and Manchester is cut by 14 min.

On weekdays a half-hourly service of

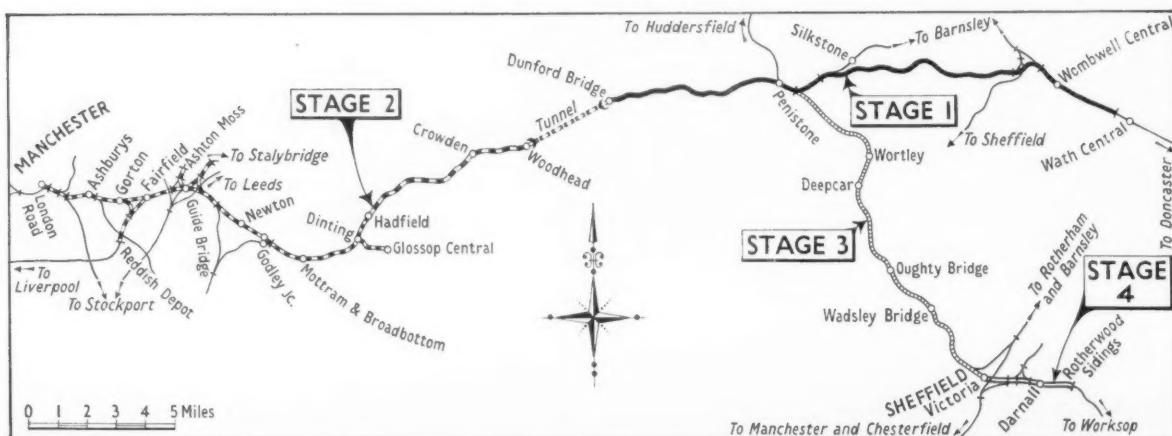
trains serves all stations, except Ardwick, between Glossop and Manchester throughout the day until after the peak evening period when trains run each hour from 7.25 p.m. to 10.25 p.m. Between Hadfield and Manchester there is a service every half-hour in the morning and evening and an hourly service during the day and from 8.33 p.m. until departure of the last train at 10.33 p.m. On Sundays, trains to and from Glossop run hourly and Hadfield two-hourly.

The local stations served are Glossop Central, Hadfield, Dinting, Broadbottom, Godley Junction, Newton, Guide Bridge, Fairfield, Gorton, and Ashburys.

The coach bodies of the multiple-unit stock, which resembles that used on the Liverpool Street-Shenfield line, are of all-steel construction. Each coach has two pairs of electro-pneumatically-operated sliding doors with permissive passenger control. Interiors are lined with birch and sycamore veneered plywood, in natural white wood finish; the ceilings and spandrels are painted cream. The large windows of the coaches are framed in dark teak and seats are covered in moquette, blue in smoking sections and russet elsewhere. Metal screens by the doorways are fitted with $\frac{1}{2}$ in. armour plate glass panels. Heating is by means of 400-watt heaters beneath the seats.

Main Line Electric Haulage

Main line trains between Manchester and Penistone, including those calling at intermediate stations between Hadfield and Penistone are hauled by Bo-Bo and Co-Co mixed-traffic locomotives, which also handle all freight traffic over this section. They traverse the new tunnel at Woodhead, described in our last issue, which was also brought into use last Monday, having been equipped with overhead wiring from the outset. At Penistone the electric locomotive is replaced by a steam locomotive for the journey over the section to Sheffield Victoria; electric locomotives will work through to Sheffield in the autumn when the Penistone-Sheffield electrification is complete. Freight trains from the Manchester area to Wath and vice versa are now electrically hauled throughout.



The Pennine electrification scheme, of which stages 1 and 2 have now been completed

Taylor Bros. & Co. Ltd. Centenary

Taylor Bros. & Co. Ltd., Trafford Park Steel Works, a member of the English Steel Corporation group of companies, was founded in Leeds in 1854 by Mr. George Taylor and his two brothers and now has as Managing Director Mr. R. G. H. Taylor, great-grandson of the founder.

The firm originally produced wrought iron of the brand known as Best Yorkshire, supplying forgings in the form of railway tyres and axles, boiler plates, and all sizes of rolled bars. In 1870, plant was installed for the manufacture of crucible steel, and in 1880 the company introduced to their works the Siemens-Martin open-hearth furnaces and so began production of steel by the acid process.

The works were further expanded until 1907, when, no further land being available, it was decided to move the works to another site. With the building of the Manchester Ship Canal and in view of the amount of export work contemplated, it was eventually decided to move the works into Trafford Park, then being developed; the transfer began in 1910 and was completed in 1923 when the Leeds works was closed.

Manufacture of Wheels and Axles

The new works specialised in the manufacture of tyres, wheels and axles for railway rolling stock. On the introduction to this country of the solid wheel with its tyre portion integral with the centre, Taylor Bros. & Co. Ltd., in 1932 installed the necessary plant for its production.

Further modernisation was undertaken and in 1951 a new wheel forge was completed at a cost in excess of £1,000,000. In this new forge special consideration was given in the design to conditions in which operators work. The control rooms housing the operators' desks are fed by their own air conditioning plant and armour plate glass wall panels give protection from heat and steam. This forge, claimed to be the most up to date of its kind in the world,

employs automatic handling devices and power operated controls, ensuring continuous production at high rates, of wheels ranging from 24 in. to 50 in. dia. on tread.

Today the works occupy 80 acres and employ 2,500 people. They consist of the steel melting department with seven 60-ton open-hearth furnaces producing both acid and basic steel; the tyre forge with its 20-ton hammer and series of three rolling mills; the axle forge with three steam hammers and designed to produce straight axles to suit any railway requirement; the new solid wheel forge, giving the greatest output of railway wheels in the British Commonwealth; and the machine shop with its modern handling methods assembling the component material received from the forges and producing in excess of 1,200 pairs per week, besides large numbers of wheel pair components for assembly in other works both at home and overseas.

STOBO STATION CLOSED.—Stobo Station and Lyne Public Siding, Scottish Region, closed on June 7 and the freight service was withdrawn. Facilities are available at Broughton and Peebles for freight traffic and parcels and other passenger train rated traffic hitherto dealt with at Stobo and Lyne. Parcels or sundry goods traffic will be conveyed between Broughton and Stobo by motor vehicle which will also provide a collection and delivery service for parcels and sundry goods traffic with premises on its direct route.

EXHIBITION OF MACHINE TOOLS.—The B. Elliott Group are holding an exhibition of their precision machine tools at Bingly Hall, Birmingham, from June 14 to 25. A wide range of milling machines, shaping machines, surface grinders, lathes, and bench and pillar drilling machines are included. Burton, Griffiths & Co. Ltd., are the distributors and stockists. The exhibition is open from 9 a.m. to 6 p.m. daily except Wednesdays, when it remains open until 9 p.m.



Interior of the wheel turning shop at the Trafford Park Works of Taylor Bros. & Co. Ltd., showing duplex machines and conveyors

Institute of Materials Handling Annual Dinner

The Earl of Onslow, proposing the toast of the Institute of Materials Handling at the Institute annual dinner at the Trocadero restaurant, London, on June 12, said that whilst British products had little to learn from competitors in design and workmanship, the problem of keeping British prices low was a serious one. Efficiency in production was the key to low prices, and mechanical handling could do much to help in this respect. With managerial skill and proper contact with labour, he added, mechanical handling by increasing efficiency and so creating better conditions for all would be welcomed by employees, and restrictive practices would be done away with.

The Chairman, Mr. John Bright, replying, said that the Institute was pledged to develop mechanical handling.

Mr. W. J. Brown, in reply to Mr. H. P. Mott, who proposed the health of the guests, said that £500 million a year would be saved if the principles of mechanical handling were adopted in this country.

Others present included:—

Messrs. T. Maxwell Orr; D. C. Boak; D. Cherry Paterson, H. M. Keegan; Major-General H. Bainbridge; Mr. E. G. Whitaker; Sir Walter Puckey; Mr. J. R. Sharp; Major-General G. A. N. Swiney; Mr. M. W. Paynter.

New Vessel for B.T.C. North Sea Services

The second motor vessel to be built by Hall, Russell & Co. Ltd. for the British Transport Commission and to be operated on its behalf by Associated Humber Lines was launched and named *Fountains Abbey* at Aberdeen on May 31 by Mrs. J. C. L. Train, wife of Mr. J. C. L. Train, Member, British Transport Commission. Her sister ship, *Whitby Abbey* was launched on April 30.

The *Fountains Abbey* has a raked stem and cruiser stern; the chief particulars are as follow:—

Length overall	...	...	256 ft.
Breadth, moulded	...	...	38 ft. 6 in.
Depth, moulded to shelter deck	...	...	21 ft.
Deadweight on draught of 13 ft. 5 in.	...	...	1,100 tons
Hold capacity	...	...	78,000 cu. ft.
Bunker capacity	...	...	78 tons

The vessel will be propelled by a single screw, driven by a six-cylinder Kincaid-Polar M56T diesel engine, designed to develop 2,100 b.h.p. at 220 r.p.m. On 90 per cent of the normal rated b.h.p., the vessel will have a speed of 13 knots. Electric power will be supplied by two 100 kW. and one 35 kW. diesel generators.

The machinery is situated amidships and there are two cargo holds forward and one aft. Each hold will be served by two seven-ton steel derricks and, in addition, a 15-ton derrick will be provided for No. 2 hold.

Perishable Traffic

Particular attention is being given to facilities for carrying fruit and vegetable traffic from the Continent, and mechanical ventilation has been installed to give six air changes per hour in the holds.

Accommodation has been provided for 12 passengers and includes six two-berth cabins, a dining-room and a smoke-room, all with a high standard of comfort for this type of vessel. Accommodation has been provided for a total of 21 officers and crew.

Parliamentary Notes

Railway Pensioners

On the motion for the adjournment of the House of Commons on June 2 Major Sir Frank Markham (Buckingham—C.) raised the question of railway pensioners. He said that last year the British Transport Commission, through the Minister of Transport, announced that it would be prepared to do something towards ameliorating the position of the worst grades of pensions. They had the assurance that the B.T.C. would set aside approximately £40,000 to help all those with less than £140, if married, or £84, if single, and it was estimated that that would assist 6,000 pensioners. Only 2,860 had in fact been helped, and instead of the scheme costing a minimum of £40,000 it was costing an estimated £33,000. One of the causes of that was the interpretation by the British Transport Commission as to what constituted a pension.

Basis of Pensions

The pension was based on 40 years service, and at the end of that time a man received a gratuity of one year's salary plus an annual pension of one-half of his annual salary. The Commission had included 10 per cent of the gratuity or lump sum as being part of the annual pension. That was an entirely erroneous definition, which had deprived possibly as many as 2,000 men of assistance under the scheme. The ceiling of £84 for a single man or £140 for a married man was too low. If a clerk retired at the age of 60, after 40 years service, he got his lump sum, and he got his pension of 50 per cent of his last year's salary. But if he was retained after the age of 60 by British Railways, as fit and able to continue, the Commission held back his lump sum gratuity. They gave him his full pay but kept back the pension, and for his extra years of service there was no increase in his pension or lump sum; but the man still suffered from the deduction of his pension contribution of at least £25 a year. By continuing to employ these men after the age of 60 the Commission was making a profit by holding back gratuities and not improving pensions. The Minister should look into that point in conjunction with the Commission.

Mr. Ralph Morley (Southampton, Itchen—Lab) said railway superannuitants were suffering real poverty. He thought the Treasury might be persuaded to find additional money. It would be a declining liability.

Comprehensive Pensions Scheme

Mr. Hugh Molson (Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation) referred to the insolvency of the superannuation schemes which the Commission took over, and said that the Commission was paying 75 per cent of the cost of the pensions, which amounted to £7,000,000 a year.

Last year an estimate was provided by the Commission of the number of beneficiaries likely to receive a supplement. The number was substantially fewer than 6,000. It was 2,900, of whom 2,650 were really superannuitants. It was an estimate made in good faith, but it had turned out to be wrong for a number of reasons. Annuitants who were recorded as married men had become widowers. A large number were in good employment, bringing in an income often in excess of £50 a year. Others were in receipt of National Insurance Pensions. The number in very great need was less than had been supposed. The B.T.C. was spending

under this scheme very nearly as much as was estimated. It cost the Commission £39,500 per year, of which £33,900 was paid to railway annuitants. Almost the whole of the balance was paid to annuitants on the London Underground railways. It was fair and reasonable to take lump sum gratuities into account. In some schemes a lump sum was paid; in other cases a somewhat larger pension without a lump sum was paid. It would have resulted in injustice if those who had received a lump sum did not have it taken into account when the supplementation of their pension was being calculated.

Treasury Grants

He did not know on what principle the Treasury could make a grant for the relief of particular categories of people who were outside any pensions scheme otherwise than through the Assistance Board. It seemed to him that any compassionate allowance without the test of need applied by the Assistance Board would appear as unfair discrimination in favour of a certain category of people. The Commission had reluctantly come to the conclusion that, having regard to all its other commitments and difficulties, it would not be justified in making any further elemosinary grants to the pensioners, who were now only one category of retired railwaymen.

Comprehensive Pensions Scheme

Turning his eyes to the future, he could announce something more cheerful. There had been negotiations between the Commission and the trade unions for a comprehensive pensions scheme, to include the wages grades who had not generally been included in the scheme that they had been discussing earlier. Final agreement was reached recently between the Commission and the trade unions, and they had now presented a complete scheme to the Minister of Transport. Mr. Lennox-Boyd hoped to be able to make a statement in the fairly near future.

Staff & Labour Matters

Railwaymen's Wages

A further meeting took place on June 9 between representatives of the B.T.C. and of the N.U.R., A.S.L.E.F., and T.S.S.A. on the question of the salary and wage structure for British Railways.

Negotiations are continuing and further meetings are to be arranged.

Lodging Turns

Delegates claiming to represent footplate staff at the main-line depots in the Eastern and North Eastern Regions of British Railways met at York on June 10. This unofficial body called upon the drivers and firemen to stage Sunday strikes beginning on June 20 until the new lodging turns scheduled to start on June 14 were withdrawn.

In response to this action the Headquarters of the A.S.L.E.F. sent out circulars to the branches concerned advising them not to take part in the threatened Sunday strikes. The circulars drew attention to the fact that the lodging turns have been agreed to at national level and should be worked until discussions on the whole question with the Commission were concluded.

Unofficial Strikes Disloyal to Union

In a statement issued by Mr. J. G. Baty, General Secretary of the A.S.L.E.F. it was stated that the Society's executive commit-

tee considered the recommendations for Sunday strikes made by the unofficial conference at York represented flagrant disloyalty to the A.S.L.E.F. and was contrary to the decision of the 1954 annual assembly of delegates. The statement continued: "The proposed action is all the more unfortunate by virtue of the fact that our branches have within the last few days been made aware of the urgent steps taken by the Society to have the question of the total abolition of lodging turns of duty discussed at national level. Any disloyalty of the kind suggested will call for the serious consideration of the executive since the undermining of the society's authority can no longer be tolerated."

Strike Action Not Approved

Meeting last Sunday, footplate staff at York, in Tyneside, and at Berwick rejected the recommendation of the unofficial body of delegates calling upon them to strike each Sunday and as we went to press it was expected that other depots concerned would do likewise.

Meanwhile, at the annual conference of the N.U.R. National Council of Locomotive Grades at Hastings, on June 13 a decision was reached recommending the N.U.R. executive to press for the total abolition of lodging turns.

Centralised Ticket Offices at Manchester London Road

Work has now been completed on the modernisation of the ticket issuing offices at Manchester London Road Station, London Midland Region. All tickets are now issued in the former North Western booking hall, where the existing office has been extended and an additional window opened.

The frontage of the new office has been redesigned and fitted with five Hygiaphone booking windows of a modern type with luggage rests below each window. Old paneling of the former office has been stripped and replaced with cream glazed tiles.

Renovation of Booking Hall

To tone with the modernised frontage, the coat of arms dating from 1839, of the old Manchester & Birmingham Railway above the booking windows has been repainted and renovated as well as the whole of the surrounding booking hall and balconies.

A new feature is the introduction of the alphabetical system of booking window identification which helps the passenger to recognise by the initial letter where to obtain a ticket. For the convenience of passengers for Euston, Birmingham, Stoke, and Sheffield, third class tickets will be issued at any of the third class booking windows.

Replanned Interior

The interior of the new office has been completely replanned, new furniture, floors, floor covering and ticket racks provided, fluorescent lighting installed, and the Passenger Agents office re-sited to adjoin the booking office. Staff accommodation has been improved by the provision of a new messroom equipped to present-day standards.

The new facilities were brought into use on May 24. Work on the modernisation started last January when a temporary wooden ticket office was erected to serve during the process of modernisation.

Contracts & Tenders

British Railways, Eastern Region, have placed contracts with Tersons Limited, Finchley, N.3, for renewal of permanent way in the Kings Cross and Ipswich districts.

British Railways, North Eastern Region, have placed orders as follows:—

Doves (Darlington) Limited, Darlington: electrical installation at Middlesbrough Station
Arthur Robinson (Contractors) Limited, Middlesbrough: Thornaby, New Motive Power Depot: general site excavation, including soilings embankment slopes and back filling the excavated area with imported slag

Veevers & Company, Gateshead: erection of new signalbox at Cowens Crossing, Blaydon

The East African Railways & Harbours have placed an order for ten four-wheel inspection car underframes with the Gloucester Railway Carriage & Wagon Co. Ltd. They will be built to the supervision and inspection of the Crown Agents for Oversea Governments & Administrations.

The Malayan Railway has placed the following orders:—

Metropolitan-Cammell Carriage & Wagon Co. Ltd.: 150 four-wheel flat low-side wagons

Cravens Railway Carriage & Wagon Co. Ltd.: 55 bogie flat low-side wagons

Gloucester Railway Carriage & Wagon Co. Ltd.: 22 bogie goods brakevans

They will be built to the supervision and inspection of the Crown Agents for Oversea Governments & Administrations.

Metropolitan-Vickers Electrical Co. Ltd. has received an order worth over £750,000 for three mill drives for the Lackenby Works of Dorman Long & Co. Ltd., comprising a 40 in. roughing mill, a 53 in. universal beam roughing mill and a 53 in. universal beam finishing mill.

Fried. Krupp, Lokomotivfabrik, Essen, is building five 23-class steam locomotives with the new standard all-welded boilers and all-welded frame structure for the German Federal Railway.

Ardeltwerke G.m.b.H., of Wilhelms-haven, has received an order for a five-axle breakdown crane, to work under overhead electrified lines, from the Norwegian State Railways. Diesel-mechanical drive is to be incorporated, except for movements of the crab, for which diesel-electric power is being provided.

Henschel & Sohn, A. G., of Kassel, is building for the Rheinische Braunkohlen A. G. 21 electric locomotives of 2,000 h.p., 30 tons maximum axle load, and Bo-Bo wheel arrangement and of the converter type, and one rectifier locomotive of similar type and proportions.

Sulzer Bros. Limited, of Winterthur, Switzerland, has received from Patino Mines & Enterprises, Bolivia, a repeat order for a 70-ton C-C type diesel-electric locomotive of 730 b.h.p. at 13,000 ft. altitude for freight train haulage over the 63-mile Machacamarca-Uncia Railway with 1 in 40-63 gradients. This order follows the successful operation of the first locomotive introduced in 1950.

Linke-Hofmann-Busch G.m.b.H., of Salzgitter, has received an order from Transfesa for 400 two-axle fruit wagons. These wagons are intended for fruit traffic

out of Spain, and extra 4 ft. 8½ in. gauge axles are being supplied so that at the French frontier the wagons can be lifted off the 5 ft. 6 in. gauge axles on to the standard-gauge sets. These wagons are being fitted to take other traffic, principally motorcars, on the return journey to Spain.

Tenders are being called for by the Railway Board, Government of India, for locomotives, rolling stock, and other equipment under its 1955-56 Rolling Stock Programme. See under Official Notices on page 703.

The British Embassy at Bogota, Colombia, has advised the Export Services Branch of the Board of Trade that the Caja Agraria has made a change in the general conditions relating to calls for tenders issued. The changes are that the calls for tenders will be open for 15 days only, and that successful tenderers will have only four days in which to constitute their five per cent guarantee.

These provisions will, in effect, preclude a United Kingdom firm not at present represented in Colombia, from submitting quotations for calls for tender issued by the Caja Agraria, and those not represented will wish to know of the above provisions so that they may make the necessary arrangements for their representation in Colombia.

According to the Special Register Information Service, Export Services Branch, Board of Trade, the United Kingdom Trade Commissioner at Karachi has reported that the Railway Division, Ministry of Communications, Government of Pakistan, is calling for tenders (Tender No. PRS-54/WAG/5), for 43 broad gauge bogie high-sided open wagons, "BOC" type, complete with body parts, underframe, wheels and axles, vacuum brake fittings, drawgear, buffering gear and painted, to particular specification and drawings, in dismantled condition and crated.

The closing date for the receipt of tenders is July 31. A set of the tender documents is available for loan to United Kingdom firms on application to the Export Services Branch, Lacon House, Theobalds Road, London, W.C.1.

According to the Special Register Information Service, Export Services Branch, Board of Trade, the United Kingdom Trade Commissioner at Johannesburg reports that the Stores Department, South African Railways, is calling for tenders for 24 items of electrical signalling materials.

The closing date for the receipt of tenders is July 1.

A copy of the tender documents, including specifications and conditions of contract, is available for loan to United Kingdom firms on application to the Export Services Branch, Lacon House, Theobalds Road, W.C.1. Copies of the drawings may be inspected and obtained, on payment of 1s. per print at the Office of the Chief Stores Superintendent, Room 204, Park Chambers, Rissik Street, Johannesburg, or any S.A.R. Stores Superintendent. Copies of the drawings may also be viewed at the Office of the High Commissioner for the Union of South Africa, London, W.C.2.

With reference to the call for tenders for rails issued by the Directorate General of Overseas Development, Lisbon, announced in our June 11 issue, following additional information has been published.

50,000 Vignoles rails 45,500 of 12 m. and 4,500 of 11·93 m.

52,500 pairs of fishplates, with screws, nuts and spring washers

120 switch plates, complete, of which 60 right hand and 60 left hand, with the respective elastic switch levers and croximes with an angle of 6° 16', corresponding to a trigonometrical tangent of 0·11

2,000,000 screws for wooden sleepers

The supply of the above will be divided into five lots each lot corresponding to 60 km. of track. The track gauge is 1·067 m. measured between the inner faces of the heads of the rails. The shape and size of the material, with the exception of the length of rails, will be indicated by the tenderers, preferable identical to 29·76 kg./m., which is at present in use and of which mention is made in the drawings attached to the general conditions of tender.

For the provisional deposit of esc. 1,000,000 book guarantees for the same amount may be substituted.

Notes and News

Clerk Required.—A clerk, aged up to 30 years, with experience of railway rates and charges, and export procedure, is required by a firm in Mitcham. See Official Notices on page 703.

Signal Staff Required on Nigerian Railway.—Vacancies exist for a signal inspector (open lines), signal inspector (new works), signal telegraph inspector (capital works) and a signal telegraph assistant (capital works), on the Nigerian Railway. See Official Notices on page 703.

Assistant Traffic Superintendents Required.—Applications are invited for the posts of assistant traffic superintendents required by the East African Railways & Harbours Administration, Commercial and Operating Departments, for tour of 40 to 48 months on temporary terms. See Official Notices on page 703.

Locomotive Maintenance Inspectors and Running Shed Foremen Required.—Applications are invited for the posts of locomotive maintenance inspectors and running shed foremen required by the Nigerian Railway for one tour of 12 to 24 months in the first instance. See Official Notices on page 703.

Course on Soil Mechanics and Foundation Engineering.—Twenty-five (including railway) civil engineers from 12 countries are attending a British Council course on soil mechanics and foundation engineering from June 14 to 26. The object of the course, planned in consultation with the Institution of Civil Engineers, is to introduce members to recent developments in the science. Visits have been arranged to research stations and laboratories and explanatory talks and lectures are being given in connection with each visit. On June 24 members will visit British Railways' Soil Mechanics Laboratory at Paddington, and the course ends on June 25 with an address from Mr. W. K. Wallace, Vice-President of the Institution of Civil Engineers.

"The Model Engineer" Exhibition.—"The Model Engineer" Exhibition will be held at the New Horticultural Hall, London, S.W.1, from August 18 to August 28, and will be opened by H.R.H. Prince Bernhard of the Netherlands. One of the

new cups to be awarded this year commences the opening of the Exhibition by the Duke of Edinburgh in 1952.

Vacancies for Civil Engineers.—Vacancies exist for fully qualified civil engineers for service in the chief engineer's department of the Rhodesia Railways. Preferably single men under 25 years of age will be considered, but married men not exceeding the age of 25 years of age may apply. Preference will be given to applicants with railway experience. See Official Notices on page 703.

Reconstruction of Adamsdown Footbridge, Cardiff.—In the second paragraph in the article on page 634 of our June 4 issue the hangers connecting the tie beams to the arch ribs are described through a typographical error as "2½ in. x ½ in. x ¾ in. angles in the plane of the chords." Beginning at the seventh line, this paragraph should read: "connection to the tie beams is effected by 2½ in. x ½ in. flat hangers. The ribs are braced together with 3 in. x 2½ in. x ¾ in. angles in the plane of the chords."

International Meeting on Pallets for Materials Handling.—The second international meetings on pallets will be held at British Standards House, 2, Park Street, London, W.1, on June 21-23, under the auspices of the International Organisation for Standardisation, and will be attended by representatives from Australia, Belgium, France, Germany, Netherlands, Norway, Sweden, and Switzerland. The conference will continue the discussions of the December, 1952, meeting, when agreement was reached on two sizes of pallets for international use. Further proposed sizes will be discussed, with the physical and dimensional characteristics of pallets. Other items to be discussed will be the securing and limitations of loads on pallets.

B.T.C. Offer for Pullman Shares.—The offer of the British Transport Commission recently accepted by shareholders of the Pullman Car Co. Ltd. is for purchase of the whole of the 900,000 issued "A" ordinary shares of 5s. each at the price of

10s. 6d. a share, and the whole of the 600,000 "B" ordinary shares of 2s. each at 8s. 6d. a share. The directors recommended shareholders to accept the offer and over 95 per cent acceptances had been received as we went to press. In the case of winding up, the "A" shares would be redeemable at 4s. 2d. a share and the "B" at 2s. and any equity. The matter is the subject of an editorial article on another page.

New Cafeteria at Windermere Lakeside.—The large increase in tourist traffic in the Lake District resulted in a decision to improve refreshment facilities at Windermere Lakeside, London Midland Region, and a modern cafeteria was opened on June 5. Refreshments now are obtainable in an attractively decorated room at ground level which commands an extensive and magnificent view of the lake. These facilities face directly on to the quay from which the lake steamers depart for Bowness and Ambleside.

New British Timken Works at Daventry.—The foundation stone of the new Daventry works of British Timken Limited, was laid on June 9, by Sir Reginald Manningham-Buller, the Solicitor-General. The new works, which will be some 70 acres in extent, is being built at a cost of £1,000,000, specially to extend the firm's facilities for the manufacture of bearings of large dimensions. Speaking at the luncheon which followed the ceremony, Mr. F. J. Pascoe, Chairman & Managing Director, British Timken Limited, said that some five years ago British Timken Limited decided that the firm's prospects were such as to warrant the creation of a new works, and it was because of the assistance given to the project by Sir Reginald Manningham-Buller, as M.P. for South Northamptonshire, that Daventry was selected. The site was an ideal one, said Mr. Pascoe, as it was 12 miles from the firm's Duston works. In the initial stages the works would employ some 400 people, but ample provision had been made for future extensions. Sir Reginald Manningham-Buller replied suitably. The guests were shown two films depicting the

types of bearings which will be produced in the Daventry factory, and the uses to which they were put.

Western Region "Somerset" Poster.—The Western Region has produced an attractive poster entitled "Somerset," for display



SOMERSET

SEE BRITAIN BY TRAIN

BRITISH RAILWAYS

Cheddar Gorge depicted in a Western Region poster by Mr. Frank Wootton

at principal stations throughout the country. The artist is Mr. Frank Wootton and the subject Cheddar Gorge.

Demolition of Kentallen Pier.—The Scottish Region is to demolish Kentallen Pier on Loch Linnhe, Argyll, which has been out of use for some years.

Mechanical Handling Exhibition.—Mr. A. R. W. Low, Parliamentary Secretary to the Ministry of Supply, opened the Mechanical Handling Exhibition at Olympia on June 9, in the absence of Mr. Duncan Sandys, Minister of Supply, who had had to go to the U.S.A. on Government business. Mr. Low said that during the last three years his Ministry had paid the mechanical handling industry £8,000,000 for equipment—which he described as "money well spent." One of the first visitors to the exhibition was H.R.H. the Duke of Edinburgh.

Visit to Tynemouth Works of Thomas De La Rue & Co. Ltd.—By invitation of the Directors, members of the technical press were taken on a conducted tour over the Tynemouth plastics factory of Thomas De La Rue & Co. Ltd. on June 2. The factory, which was opened in September, 1947, covers an area of 50 acres, and is said to be the largest laminated plastic factory in Europe. The visitors were able to see all the operations involved in the manufacture of laminated sheets; three principal types of which are Formica, Delaron, and Trafolyte. The properties of Formica, including hardness and ease of cleaning, together with its decorative qualities, make it particularly suitable for paneling in railway rolling stock. Delaron is a non-decorative paper-based, or fabric-based material, the former having excel-

Awkward Load in the London Midland Region



The longest load ever carried by the London Midland Region of British Railways, a steel girder 128 ft. long, 10 ft. high, and 2 ft. wide, weighing 45 tons, passing through Coventry

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

LOCOMOTIVE MAINTENANCE INSPECTORS M2C/30225/RA and **RUNNING SHED FOREMEN** M2C/30208/RA required by the **NIGERIAN GOVERNMENT RAILWAY** for one tour of 12/24 months in the first instance. Outfit allowance £60. Free passages for officers and wives and assistance towards cost of children's passages or grants of up to £150 annually for their maintenance in the United Kingdom. Liberal leave on full salary. M2C/30225/RA, Salary, etc. £1,434 rising to £1,560 a year with gratuity of £150 a year. Candidates must have served five year railway apprenticeship followed by at least ten years' running shed experience and must have reached Class II Shed Master or Class II Mechanical Foreman, M2C/30208/RA. Salary, etc. (a) in scale £750 rising to £1,035 a year with prospect of pensionable employment or (b) £864 rising to £1,194 a year on temporary terms with gratuity of up to £150 a year. Candidates should have served an apprenticeship in a main locomotive workshop and have had at least seven years' subsequent experience in a Running Shed. They must be thoroughly acquainted with all branches of Running Shed fitting and with periodical examinations of locomotives. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote the reference number stated against the post applied for.

CLERK, aged up to 30 years, with experience of railway rates and charges and export procedure, required for transport section of an old-established Mitcham company. Good geographical knowledge essential. Reply, stating experience, salary required and age, to Box 260. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RHODESIA RAILWAYS, VACANCIES FOR CIVIL ENGINEERS. Vacancies exist for fully qualified Civil Engineers for service in the Chief Engineer's Department of the Rhodesia Railways. Preferably single men under the age of 25 years will be considered. Married men not exceeding the age of 25 years may apply. Preference will be given to Applicants with Railway experience. A degree in Civil Engineering and/or Corporate Membership of the Institution of Civil Engineers is essential. The grades of Junior and Assistant Engineer have salary scales between the limits of £586 to £1,460 per annum with incremental notches mainly of 40 per annum and the commencing salary would be determined in accordance with age and experience. The vacancies are for appointment to the Temporary Staff in the first instance, but transfer to the Permanent Staff may be made to fill vacancies and on the recommendation of the Chief Engineer. Vacancies may occur later for members of the Permanent Staff for the grade of District Engineers, selection within the scale of £1,350 to £1,750 per annum. All salaries are enhanced by a variable Cost of Living Allowance, which at present is 21 per cent on basic rates. Full particulars may be obtained from the London Agent, Rhodesia Railways, 241, Salisbury House, London Wall, London, E.C.2.

VACANCIES exist for SIGNAL staff on the Nigeria Railway as under:—

(i) **SIGNAL INSPECTOR (OPEN LINES)** M2C/30599/RA: Candidates must have served an apprenticeship in a railway Signal Department or with a firm manufacturing Railway Signal equipment and should be a member of the Institution of Railway Signal Engineers or qualified to become an Associate. They must be well versed in construction and maintenance of mechanical signalling and must have considerable plant installation experience of Double Wire Signalling equipment. Salary, etc., either (a) in scale £750 rising to £1,035 with prospect of pensionable employment or (b) on temporary terms in scale £864 rising to £1,194 plus a gratuity of up to £150 a year.

(ii) **SIGNAL INSPECTOR (NEW WORKS)** M2C/30598/RA: Candidates must have served an apprenticeship in a Railway Signal Department or with a firm manufacturing Railway Signal equipment and have had working experience of laying in mechanical signal apparatus, particularly the Westinghouse double wire type; they must be capable of repairing same and taking charge of, and instructing local signal staff. A practical knowledge of interlocking, hand bench fitting and repairing is essential. Salary, etc., on temporary terms in scale £864 rising to £1,194 plus gratuity of up to £150 a year.

(iii) **SIGNAL TELEGRAPH INSPECTOR (CAPITAL WORKS)** M2C/30597/RA: Candidates preferably Associates of the Institution of Railway Signal Engineers or Graduates of the Institution of Electrical Engineers must possess a working knowledge and experience of installation and servicing of (a) G.E.C. Telephone Train Control Apparatus (b) The Railway Signal Company's Electric Train Staff Instruments (c) Mechanical Signalling apparatus particularly Double Wire apparatus. Salary, etc., on temporary terms in scale £864 rising to £1,194 plus on gratuity of up to £150 a year.

(iv) **SIGNAL TELEGRAPH ASSISTANT (CAPITAL WORKS)** M2C/30596/RA: Candidates, preferably Members of the Institution of Railway Signal Engineers or A.M.I.E.E., must have sound experience and working knowledge of (a) G.E.C. Telephone Train Control equipment including line booster apparatus (b) the Railway Signal Company's Electric Train Staff Instruments including the electric interlocking with the Starting Signal (c) the Westinghouse Double Wire Signalling apparatus. Salary, etc., on temporary terms in scale £1,434 rising to £1,560 plus gratuity of £150 a year.

In all cases an outfit allowance of £60 is payable; free passage for officers and wives and assistance towards cost of children's passages or up to £150 a year for their maintenance in the United Kingdom. Liberal leave on full salary. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience quoting reference number of post applied for.

ASSISTANT TRAFFIC SUPERINTENDENTS required by EAST AFRICAN RAILWAYS AND HARBOURS ADMINISTRATION, Commercial & Operating Dep'ts, for tour of 40/48 months on temporary terms at salary, etc., according to experience, up to £1,530 a year with gratuity of 10 per cent of salary. Outfit allowance up to £90 plus housing or allowance in lieu. Free passages. Liberal leave on full salary. Candidates, of good education, must have had sound practical administrative experience as Railway Traffic Officers. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/34138/RA.

THE RAILWAY BOARD, Government of India, propose to obtain from established and reliable manufacturers the items of rolling stock and other railway equipment shown in the list below. Manufacturers in Europe, the United Kingdom and North America can obtain further details of designs, specifications, etc., from the Director General, India Store Department, 32/44, Edward Road, London, W.2, and manufacturers in other countries and authorised agents in India of all foreign manufacturers can obtain these particulars from the Director of Railway Equipment, Railway Board, New Delhi, India.

List of Rolling Stock and Railway Equipment 1955-56 Rolling Stock Programme

LOCOMOTIVES BROAD GAUGE: 15 Electric Prototype Locomotives (3,000 volt for Calcutta Electrification Scheme).

METRE GAUGE: 12 "YM" Class Locomotives, 5 Diesel Shunting Locomotives, 20 Diesel General Purpose Locomotives.

LOCOMOTIVE BOILERS BROAD GAUGE: 11 "XB" type, "YA" type.

LOCOMOTIVE COMPONENTS: 76 CWD/AWD Fire Boxes, 14 MAWD Fire Boxes.

COACHING STOCK BROAD GAUGE:—Electric Multiple Unit Stock (1,500 volt Bombay Suburban Traffic) (a) 12-4 Car Unit, (b) 2-Spare Motor Coaches; Electric Multiple Unit Stock (3,000 volt DC Calcutta Electrification) (a) 16-3 Car Units (b) 2-Spare Motor Coaches, alternatively (a) 12-4 Coach Units (b) 2-Spare Motor Coaches.

GOODS STOCK WAGONS BROAD GAUGE: 3 Tower Wagons without body for Western Railway, 3 Tower Wagons without body for Eastern Railway (Calcutta Electrification Scheme).

CRANES BROAD GAUGE: 1 75-ton steam breakdown crane, 4 40-ton steam breakdown cranes, 6 20-ton steam travelling cranes, 3 5-ton steam travelling cranes (special specification). METRE GAUGE: 3 35-ton steam breakdown cranes, 8 20-ton steam breakdown bridge cranes.

WHEELSETS BROAD GAUGE: WA 23-18.000; METRE GAUGE: WA 42-1,000, WA 36-12.000; NARROW GAUGE: WA 3011-400. The list (F.P.-5) has been divided into two parts, viz., A and B. Manufacturers should note that offers for each item in either of these two parts should be submitted SEPARATELY and should reach the Director, Railway Equipment, Railway Board, New Delhi (India), not later than: September 1, 1954, for all items in list F.P.-5A, and October 1, 1954, for all items in list F.P.-5B.

Forms of tender may be obtained from the Director General, India Store Department, 32/44, Edward Road, London, W.2, at a fee of 10s, which is non-returnable. Cheques to be made payable to "High Commissioner for India." Please quote reference No. S.661/54/C.B.R/LY.

YOUNG ENGINEERS required for setting out, etc. Experience on railway work desirable but not essential. Must have completed National Service. Apply Eggar Construction Co. Ltd., East Common Lane, Scunthorpe.

RAILWAY SIGNALLING—A well known firm of Electrical Signalling Contractors has vacancies for Technical Assistants preferably with Railway experience. Apply in writing stating experience, age and salary required. Box 245. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press, Limited, 33, Tothill Street, London, S.W.1.

necessary because of a rise of some £300,000 annually in the combined operating costs of the U.T.A. and the G.N.R. in Ulster. There are to be increases averaging 25 per cent in charges for parcels and 10 per cent for other goods carried by passenger train. No general fares increase is contemplated and in the passenger charges scheme being submitted to the Northern Ireland Transport Tribunal there may be a proposal to reduce the level of ordinary fares.

L.M.A. Underground Mines Locomotives Division Cocktail Party.—Models of mines locomotives displayed at the cocktail party given by members of the Underground Mines Locomotives Division of the Locomotive Manufacturers' Association of Great Britain on June 2, to delegates of the National Association of Colliery Managers' Conference at Buxton, were illustrated in our June 4 issue. Those of the 204-h.p. locomotive by Hudswell Clarke & Co. Ltd., and of the 75-h.p. locomotive by Ruston & Hornsby Limited were built by Edward Exley Limited; the model of the 100-h.p. Hunslet locomotive was constructed by H. Clarkson & Son, of York.

lent electrical insulating properties, while fabric-based material is used for gear-wheels and so on. Traffolyte, like Formica, is a decorative laminate and used for ceilings in rolling stock. The visitors also saw the production of thermo-plastic extrusions in P.V.C., Polythene, and Plastic floor tiles.

Improvement in Northern Line City Service.—From June 28 a through service of trains will again be operated between Golders Green and the City, on the Northern Line of London Transport, throughout the off-peak period between the morning and evening rush hours on Mondays to Fridays. Through trains will run every six min. and so enable all passengers between the Golders Green branch and Kings Cross, London Bridge or the City to travel direct without having to change at Euston as at present.

Britain's Fastest Scheduled Train.—Among the many accelerations made by the Western Region of British Railways in the summer timetable, which came into force on June 14, the restoration of "The Bristolian" to the prewar timing of 1 hr.

Season Ticket Rates Increase in Northern Ireland.—Increases of between five and 20 per cent in season and workers' ticket rates will come into force in Northern Ireland on June 28. They have been made

and that of the 100-h.p. North British Locomotive Co. Ltd. engine by Mr. Hunt, of Reading, for Bassett Lowke Limited, which latter firm was responsible for the track-work, electrical control, and lighting in the model display.

Recommended Increase in Salaries of G.N.R. Staff in Northern Ireland.—The Irish Railway Wages Board has recommended a six per cent increase from October 1, in the salaries of clerical staff, stationmasters, agents and supervisors employed by the Great Northern Railway in Northern Ireland. It has also recommended adjustment of the salary scales of G.N.R. staff employed in the Republic; the proposed scales for class 4 clerks would establish parity with the rates paid to C.I.E. clerks in the same grade.

Congress Delegates Visit to North British Locomotive Company Works.—Delegates to the Sixteenth International Railway Congress held in London last month availed themselves of the invitation of the North British Locomotive Co. Ltd. to visit the company's works in Glasgow. They were able to see special types of steam and diesel-hydraulic locomotives and other of the firm's products demonstrated. Among the visitors were:—

Argentina: Señor Atilio Cappa, President of the Association of Pan-American Railways; *Ceylon Government Railway:* Mr. M. M. Greve, Divisional Transportation Superintendent, and party; *Iranian State Railways:* Mr. K. Hedayat, Advisor & Special Representative in Europe; *South African Railways & Harbours:* Mr. D. H. C. du Plessis, General Manager, and party; and Mr. C. T. Long, Assistant Chief Mechanical Engineer (Motive Power), and party.

English Steel Corporation Limited.—Vickers Limited and Cammell Laird & Co. Ltd. announce that they have agreed to acquire from the Iron & Steel Holding & Realisation Agency the whole of the ordinary shares of English Steel Corporation Ltd. The capital of English Steel Corporation is by mutual agreement between the parties being reorganised. The loan capital will stand at £5,000,000 in 4½ per cent debenture stock, redeemable 1974-79. The share capital is being divided into 5,000,000 5½ per cent cumulative redeemable preference shares of £1 each, 6,000,000 "A" ordinary shares of £1 each, and 2,000,000 "B" ordinary shares of £1 each. Vickers will purchase the above-mentioned "A" ordinary shares and Cammell Laird will purchase the "B" ordinary shares for £7,500,000 and £2,500,000 respectively, a total of £10,000,000. The whole of the debenture stock and of the preference capital is being retained by the Agency for the time being. Before nationalisation of the iron and steel industry Vickers and Cammell Laird together owned the English Steel Corporation.

Brush Electrical Engineering Co. Ltd., Open Day.—An open day was held on May 29 at the Loughborough works of the Brush Electrical Engineering Co. Ltd. This is the second occasion on which the works have been opened to the public, and there were 4,000 visitors, among whom was the Mayor of Loughborough, Councillor Lewis Walter Hull, who was received by Mr. J. W. C. Milligan, Managing Director of the Company. Many shops were in operation, and the public were able to see various stages of manufacture of turbines, turbo-alternator sets, transformers, switch-

gear, motors, and generators, diesel electric locomotives and battery electric trucks. One of the diesel electric locomotives for the Ceylon Government Railway order for 25, similar to that which recently drew the Royal train on the recent visit to Ceylon, was in operation on the Company's test track, and attracted considerable attention. The public were able to see work on many export orders for Commonwealth countries and world markets generally.

Forthcoming Meetings

June 21 (Mon.) to June 23 (Wed.)—International Meeting on Pallets for Materials Handling at British Standards House, 2, Park Street, London, W.1.

June 26 (Sat.)—British Railways, Southern Region, Lecture & Debating Society. Afternoon visit to the old Croydon, Merstham & Godstone

Railway, from Coulsdon to Merstham.

June 26 (Sat.)—Railway Students' Association. Visit to the marshalling yards at Whitemoor. Party leave Liverpool Street (platform No. 9), at 8.24 a.m.

June 30 (Wed.)—Institute of Metals, at 4, Grosvenor Gardens, London, S.W.1, at 5 p.m. Lecture on "The Brittle Fracture of Metals: Some New Developments," by Professor E. Crowan.

June 30 (Wed.)—Permanent Way Institution, Manchester & Liverpool Section. Evening inspection of prize winning length of line on the Liverpool District, by permission of Mr. G. F. Kent, District Engineer, British Railways, London Midland Region, Liverpool.

July 1 (Thu.)—Railway Students' Association. Evening visit commencing at 6.30 p.m., to British Overseas Airways Corporation terminal at Victoria.

Railway Stock Market

Developments in international affairs dominated sentiment in stock markets, and with buyers showing a waiting attitude, prices, notably in the industrial sections, suffered a further reaction. Nevertheless, the setback has been small when compared with the extent of the upward movement in recent weeks. The fact that investors generally are not selling despite recent gains in many of their holdings, would appear to indicate widespread confidence in a rally before long. New issues are of course attracting a good deal of attention. Besides the Rolls-Royce debenture issue this week, there is the pending Stewarts and Lloyds issue of 10,000,000 ordinary shares at 35s. each. The latter is already assured of over-subscription because of applications by the big new issue houses who sponsor the steel offers. The City hopes there will be big applications from the public as well, and that Stewarts and Lloyds shares will begin their market life again at a satisfactory premium. If so, it would provide an important tonic for the many other important steel offers which will appear in the next few months.

Foreign rails turned easier with the general market trend, but this was due mainly to falling off in demand and not to selling. After the better tendency in evidence recently, Antofagasta stocks receded, the ordinary to 8½ and the preference to 41. The 5 per cent (Bolivia) debentures showed dealings ranging from 68½ to 70.

Canadian Pacifies came in for some profit taking after their recent rise, and were \$47½. The 4 per cent preference stock has been steady at £67½, but the 4 per cent debentures were less firm at £88½. Elsewhere, White Pass no par value shares eased to \$24½.

There were fewer dealings in Manila issues, but the "A" debentures strengthened to 144. The "B" debentures were 137, the preference shares 19s. 1½d. and the 1s. ordinary shares 8s. 9d.

United of Havana second income stock at 42½ and the consolidated stock at 6½ moved fractionally lower.

Mexican Central "A" debentures have been steady at 70½. Nitrate Rails shares were 21s., Taltal Railway shares 14s. and San Paulo units 3s. 7½d., while in other directions, Dorador Railway ordinary stock, in which there have been few dealings recently, changed hands at 72.

Brazil Railway bonds were 8, having held most of their recent improvement. Costa Rica ordinary stock was also 8, with the first debentures 62 and the second debentures 45½. Elsewhere, Guayaquil & Quito first bonds have changed hands at 50. Paraguay Central prior debentures marked 20, the "B" income stock 9, and the "D" income stock 2½.

Among Indian rails, Barsi kept at 122½, and business up to 92 was marked in the 5 per cent debentures of West of India Portuguese and at 90½ in the capital stock.

Nyasaland 3½ per cent debentures transferred at 80 and the ordinary shares at 4s. 1½d. Midland of Western Australia income debentures marked 40, while the ordinary stock was quoted at 21. Algoma Central 5 per cent debentures were \$243, and the voting trust certificates have marked 82s. 6d.

In road transport shares Maidstone & District were strong and active up to 25s. 6d., East Kent marked 26s. 6d., Potteries Motor Traction 29s. 3d., and Ribble Motor Services 37s. West Riding were 31s. 9d., Southdown 32s. and Lancashire Transport 54s. 6d.

Engineering and kindred shares were generally lower with some shares falling back sharply, mostly those which recently recorded good gains. Babcock & Wilcox, for instance, declined to 53s. 9d., T. W. Ward to 45s. 9d., and Ruston and Hornsby to 51s. 6d. Tube Investments were 66s., Guest Keen 57s., and Allied Ironfounders 66s. 9d. Cammell Laird 5s. shares strengthened to 14s. and Vickers to 64s. 3d. on the terms of the English Steel deal. Owing to the reorganisation of the English Steel capital, Vickers and Cammell Laird repurchase the whole of the shares, which will now carry control for £10,000,000, or considerably less than would have been the case if the capital had not been rearranged. View in the City is that because of this neither Vickers nor Cammell Laird will have to raise additional capital to finance the repurchase.

The shares of locomotive builders and engineers have been relatively steady, though they were affected to some extent by the surrounding trend of markets. Beyer Peacock came back to 39s. 3d., Charles Roberts 5s. shares were 9s. 3d., Hurst Nelson 42s., North British Locomotive 15s. 9d., and Vulcan Foundry 24s. 3d. Gloucester Wagon 10s. shares were 17s., and Wagon Repairs 5s. shares 13s.